Changes for the Better

MITSUBISHI ELECTRIC

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

February 2009

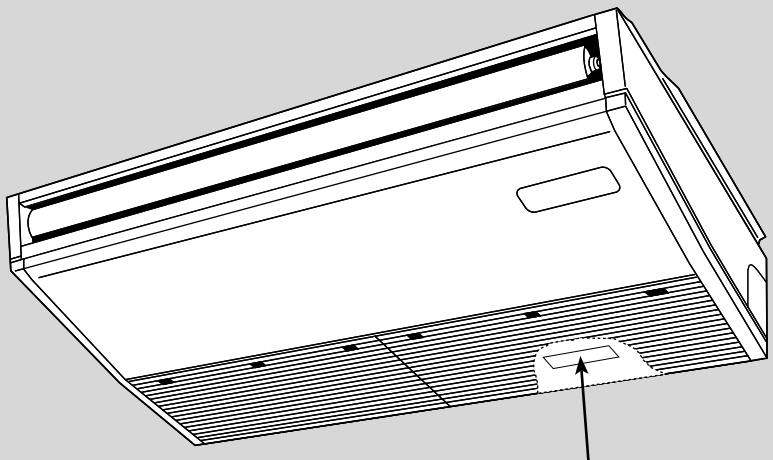
No. OCH450

TECHNICAL & SERVICE MANUAL

CITY MULTI Series Ceiling Suspended R410A / R22

Indoor unit [Model names]	[Service Ref.]
PCFY-P15NKMU-E	PCFY-P15NKMU-E
PCFY-P24NKMU-E	PCFY-P24NKMU-E
PCFY-P30NKMU-E	PCFY-P30NKMU-E
PCFY-P36NKMU-E	PCFY-P36NKMU-E

Note:
- This manual describes only service data of the indoor units.
- RoHS compliant products have <G> mark on the spec name plate.



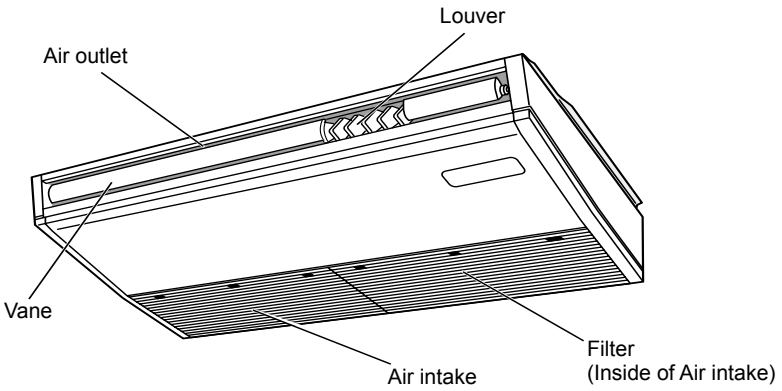
INDOOR UNIT

CONTENTS

CITY MULTI

1 PART NAMES AND FUNCTIONS

● Indoor unit



• Wired remote controller

Display Section

For purposes of this explanation, all parts of the display are shown as lit. During actual operation, only the relevant items will be lit.

Day-of-Week
Shows the current day of the week.

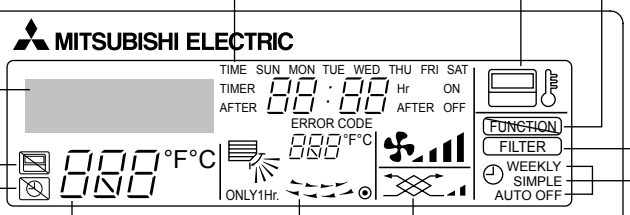
Time/Timer Display
Shows the current time, unless the simple or Auto Off timer is set.
If the simple or Auto Off timer is set, the time to be switched off is shown.

"Sensor" indication
Displayed when the remote controller sensor is used.

"Locked" indicator
Indicates that remote controller buttons have been locked.

"Clean The Filter" indicator
To be displayed on when it is time to clean the filter.

Identifies the current operation
Shows the operating mode, etc.
*Multilanguage display is available.



Timer indicators
The indicator comes on if the corresponding timer is set.

"Centrally Controlled" indicator
Indicates that operation from the remote controller has been prohibited by a master controller.

Fan Speed indicator
Shows the selected fan speed.

Ventilation indicator
Appears when the unit is running in Ventilation mode.

Up/Down Air Direction indicator
The indicator ↘ shows the direction of the outcoming airflow.

Room Temperature display
Shows the room temperature. The room temperature display range is 46–102°F. The display blinks if the temperature is less than 46°F or 102°F or more.

"Timer is Off" indicator
Indicates that the timer is off.

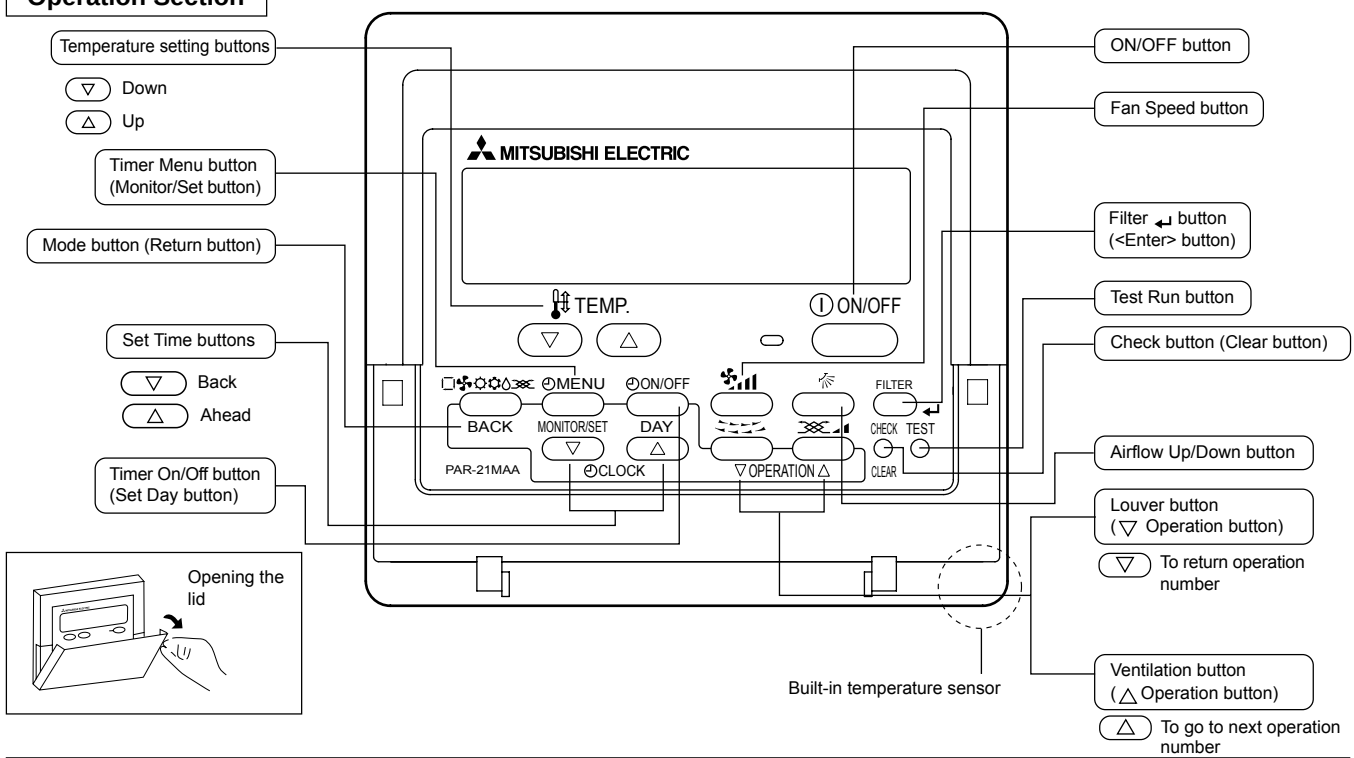
"One Hour Only" indicator
Displayed if the airflow is set to Low or downward during COOL or DRY mode. (Operation varies according to model.)
The indicator goes off in one hour, at which time the airflow direction also changes.

Louver display
Indicates the action of the swing louver. Does not appear if the louver is not running.

Temperature Setting
Shows the target temperature.

(Power On indicator)
Indicates that the power is on.

Operation Section



Note:

- "PLEASE WAIT" message
  This message is displayed for approximately 3 minutes when power is supplied to the indoor unit or when the unit is recovering from a power failure.
- "NOT AVAILABLE" message
  This message is displayed if an invalid button is pressed (to operate a function that the indoor unit does not have).
  If a single remote controller is used to operate multiple indoor units simultaneously that are different types, this message will not be displayed as far as any of the indoor units is equipped with the function.

2 SPECIFICATION

2-1. SPECIFICATIONS

Model			PCFY-P15NKMU-E	PCFY-P24NKMU-E	PCFY-P30NKMU-E	PCFY-P36NKMU-E
Power source			1-phase 208/230V 60Hz			
Cooling capacity (Nominal)	*1	kW	4.4	7.0	8.8	10.6
	*1	Btu/h	15,000	24,000	30,000	36,000
	Power input	kW	0.03	0.04	0.09	0.11
	Current input	A	0.35	0.41	0.83	0.97
Heating capacity (Nominal)	*2	kW	5.0	7.9	10.0	11.7
	*2	Btu/h	17,000	27,000	34,000	40,000
	Power input	kW	0.03	0.04	0.09	0.11
	Current input	A	0.35	0.41	0.83	0.97
External finish			MUNSELL (6.4Y 8.9/0.4)			
External dimensions H x W x D		mm	230×960×680	230×1280×680	230×1600×680	
		in.	9-1/16×37-13/16×26-3/4	9-1/16×50-3/8×26-3/4	9-1/16×63×26-3/4	
Net weight		kg (lb)	24 (53)	32 (71)	36 (79)	38 (84)
Heat exchanger			Cross fin (Aluminum fin and copper tube)			
FAN	Type x quantity		Sirocco fan × 2	Sirocco fan × 3	Sirocco fan × 4	
	External static press.	Pa	0			
		mmH_2O	0			
	Motor type		DC motor			
	Motor output	kW	0.090	0.095	0.160	
	Driving mechanism		Direct-driven by motor			
	Airflow rate (Low-Mid2-Mid1-High)	m^3/min	10-11-12-13	14-15-16-18	20-22-25-28	21-24-27-31
		L/s	167-183-200-217	233-250-267-300	333-367-417-467	350-400-450-517
		cfm	353-388-424-459	494-530-565-636	703-777-883-989	742-847-953-1095
Noise level (Low-Mid2-Mid1-High) (measured in anechoic room)		dB <A>	29-32-34-36	31-33-35-37	34-37-40-43	36-39-42-44
Insulation material			Polyeter sheet			
Air filter			PP honeycomb			
Protection device			Fuse			
Refrigerant control device			LEV			
Connectable outdoor unit			R410A, R22 CITY MULTI			
Diameter of refrigerant pipe	Liquid (R410A)	mm(in.)	ø6.35 (ø1/4) Flare	ø9.52 (ø3/8) Flare	ø9.52 (ø3/8) Flare	ø9.52 (ø3/8) Flare
	(R22)		ø6.35 (ø1/4) Flare	ø9.52 (ø3/8) Flare	ø9.52 (ø3/8) Flare	ø9.52 (ø3/8) Flare
	Gas (R410A)	mm(in.)	ø12.7 (ø1/2) Flare	ø15.88 (ø5/8) Flare	ø15.88 (ø5/8) Flare	ø15.88 (ø5/8) Flare
	(R22)		ø12.7 (ø1/2) Flare	ø15.88 (ø5/8) Flare	ø15.88 (ø5/8) Flare	ø19.05(ø3/4) Flare*3
Field drain pipe size		mm(in.)	O.D. 26mm (1)			
Standard attachment	Document		Installation Manual, Instruction Book			
	Accessory		Drain joint socket			
Optional parts	Drain pump kit		PAC-SH83DM-E	PAC-SH84DM-E		
	High efficiency filter		PAC-SH88KF-E	PAC-SH89KF-E	PAC-SH90KF-E	
	External heater adapter		PAC-YU25HT			
	i-see Sensor		PAC-SH91MK-E			
	Wireless remote controller with i-see Sensor		PAR-SA92MW-E			
	Wireless remote controller kit		PAR-SL93B-E			
Remarks	Installation		Details on foundation work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.			

Note :

*1 Nominal cooling conditions

Indoor :	80°FDB/67°FWB (26.7°CDB/19.4°CWB)
Outdoor :	95°FDB (35°CDB)
Pipe length :	25 ft. (7.6 m)
Level difference :	0 ft (0 m)

*2 Nominal heating conditions

	70°FDB(21°CDB)
	47°FDB/43°FWB (8.3°CDB/6.1°CWB)
	25 ft. (7.6 m)
	0 ft (0 m)

*3 Connect the joint (purchased locally) for R22

* Due to continuing improvement, above specification may be subject to change without notice.

Unit converter

kcal/h = kW × 860
Btu/h = kW × 3,412
cfm = m^3/min × 35.31
lb = kg/0.4536

*Above specification data is subject to rounding variation.

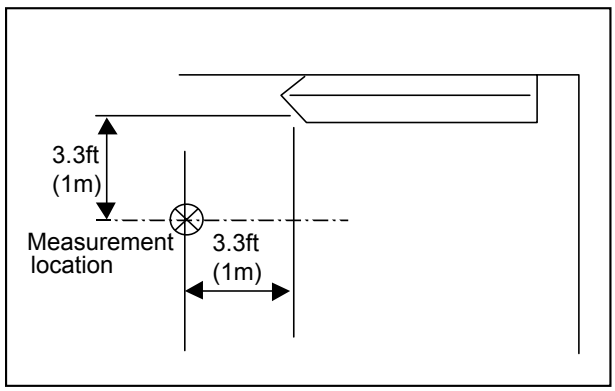
2-2. ELECTRICAL PARTS SPECIFICATIONS

Service Ref. / Parts name	Symbol	PCFY-P15NKMU-E	PCFY-P24NKMU-E	PCFY-P30NKMU-E PCFY-P36NKMU-E
Room temperature thermistor	TH21	Resistance 30°F/15.8kΩ, 50°F/9.6kΩ, 70°F/6.0kΩ, 80°F/4.8kΩ, 90°F/3.9kΩ, 100°F/3.2kΩ		
Liquid pipe thermistor	TH22	Resistance 30°F/15.8kΩ, 50°F/9.6kΩ, 70°F/6.0kΩ, 80°F/4.8kΩ, 90°F/3.9kΩ, 100°F/3.2kΩ		
Gas pipe thermistor	TH23	Resistance 30°F/15.8kΩ, 50°F/9.6kΩ, 70°F/6.0kΩ, 80°F/4.8kΩ, 90°F/3.9kΩ, 100°F/3.2kΩ		
Fuse (Indoor controller board)	FUSE	250V 6.3A		
Fan motor	MF	8-pole OUTPUT 90W	8-pole OUTPUT 95W	8-pole OUTPUT 160W
Vane motor	MV	MSBPC20 DC12V 300Ω/phase		
Drain-pump (Option)	DP	INPUT 10.8W 24ℓ/Hr		
Drain float switch	FS	Open / Short detection DC 5V		
Linear expansion valve	LEV	DC12V Stepping motor drive Port dimension ø3.2 (0~2000pulse) EFM-40YGME		DC12V Stepping motor drive Port dimension ø5.2 (0~2000pulse) EFM-80YGME
Power supply terminal block	TB2	(L1, L2, GR) Rated to 330V 30A※		
Transmission terminal block	TB5	(M1, M2, S) Rated to 250V 20A※		
MA remote controller terminal block	TB15	(1, 2) Rated to 250V 10A※		

※Note : Refer to WIRING DIAGRAM for the supplied voltage.

2-3. SOUND LEVEL

PCFY-P•NKMU-E



* Measured in anechoic room.

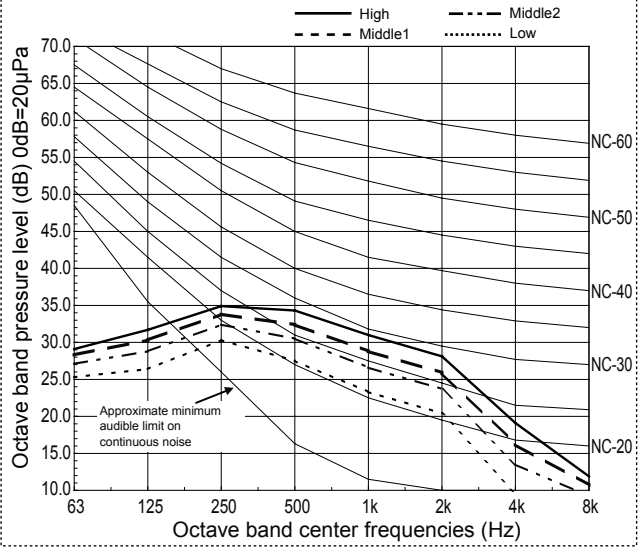
Sound level at anechoic room : Low-Mid2-Mid1-High

Service Ref.	Sound level dB (A)
PCFY-P15NKMU-E	29-32-34-36
PCFY-P24NKMU-E	31-33-35-37
PCFY-P30NKMU-E	34-37-40-43
PCFY-P36NKMU-E	36-39-42-44

2-4. NC CURVES

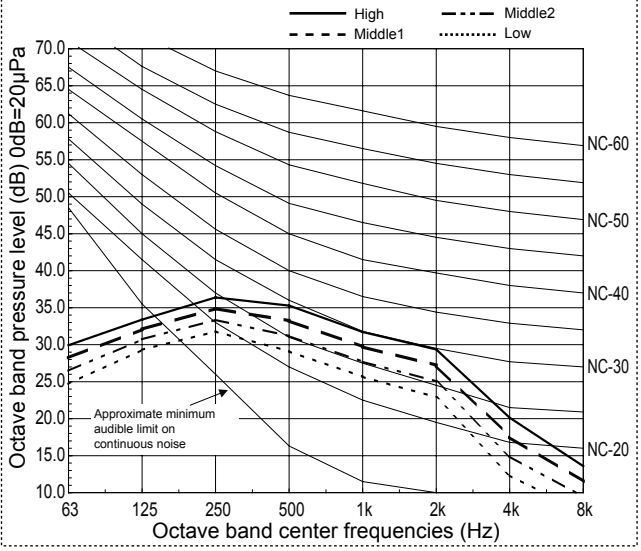
PCFY-P15NKMU-E

External static pressure : 0Pa
Power source : 208V, 230V, 60Hz



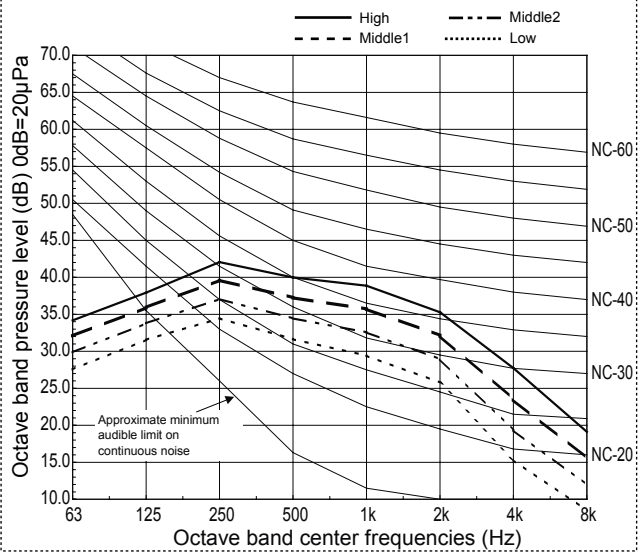
PCFY-P24NKMU-E

External static pressure : 0Pa
Power source : 208V, 230V, 60Hz



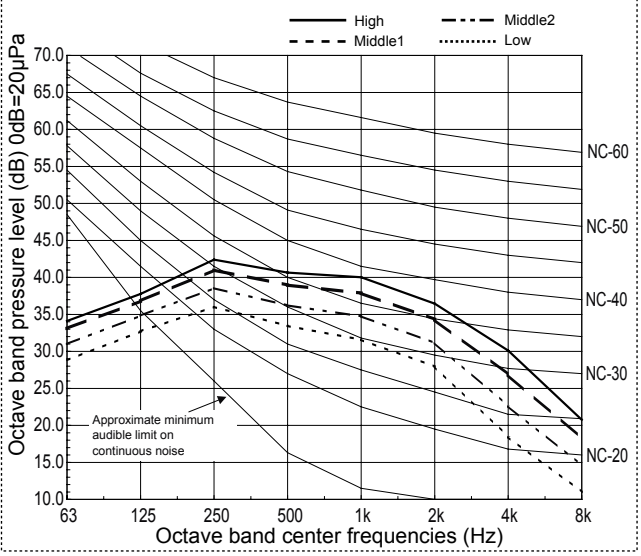
PCFY-P30NKMU-E

External static pressure : 0Pa
Power source : 208V, 230V, 60Hz



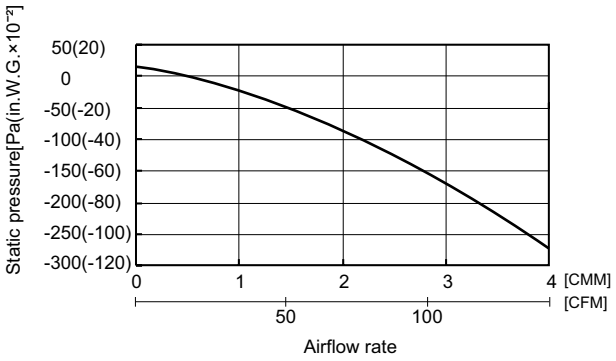
PCFY-P36NKMU-E

External static pressure : 0Pa
Power source : 208V, 230V, 60Hz

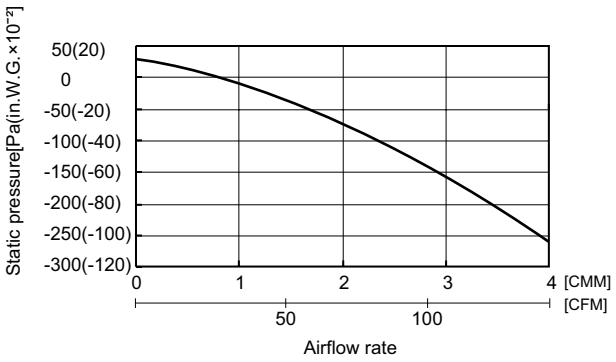


2-5. FRESH AIR INTAKE AMOUNT & STATIC PRESSURE CHARACTERISTICS

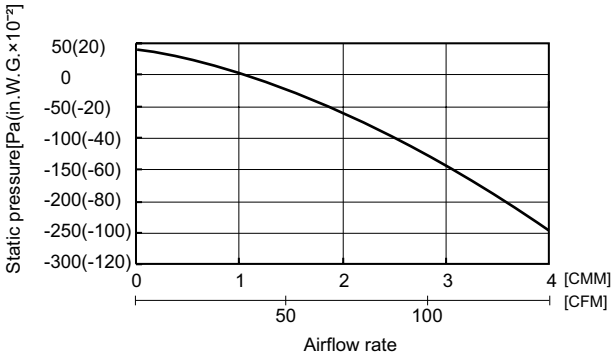
■ PCFY-P15NKMU-E



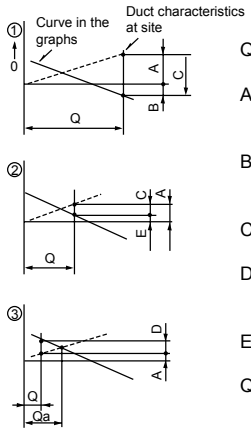
■ PCFY-P24NKMU-E



■ PCFY-P30, 36NKMU-E



How to read curves

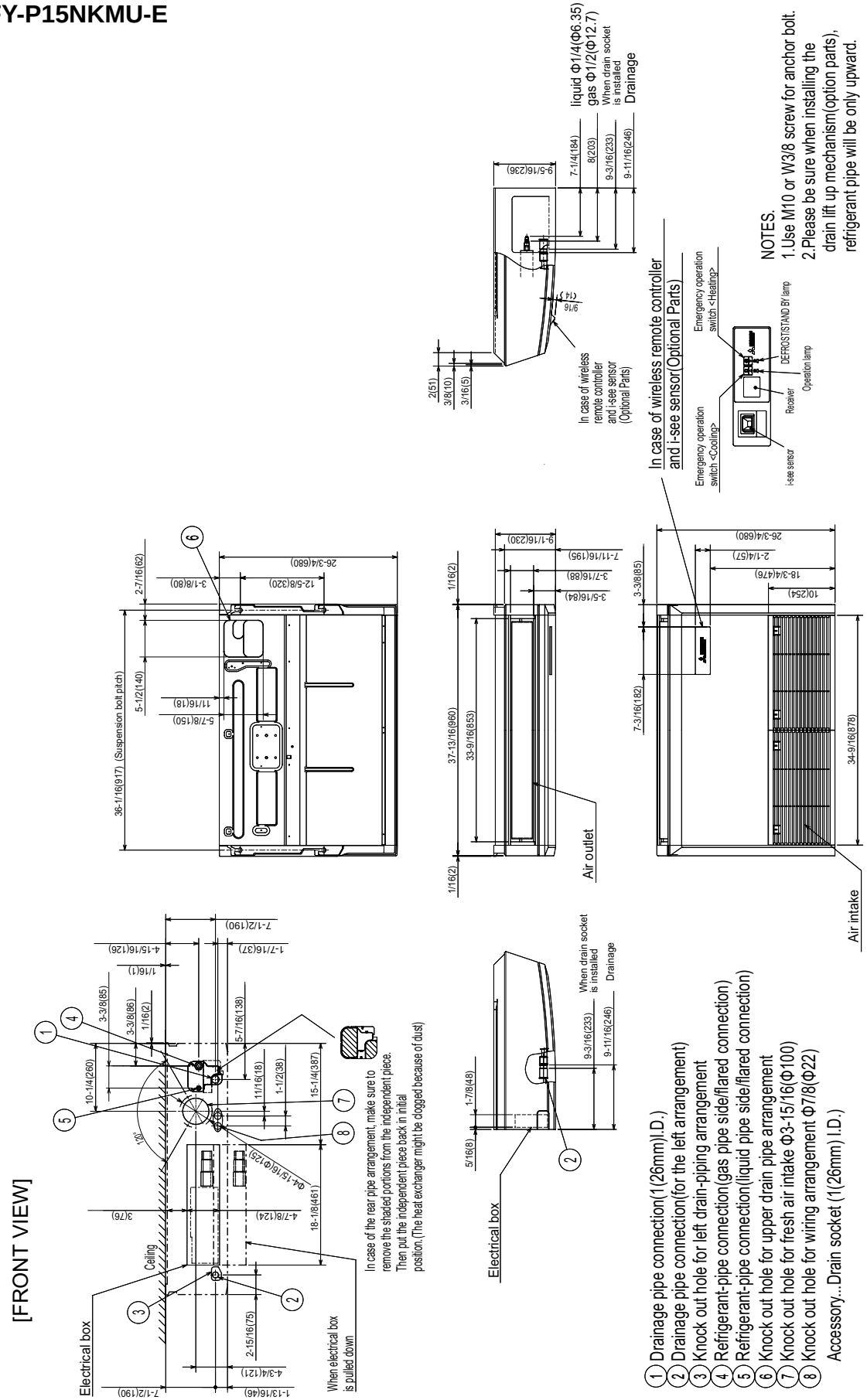


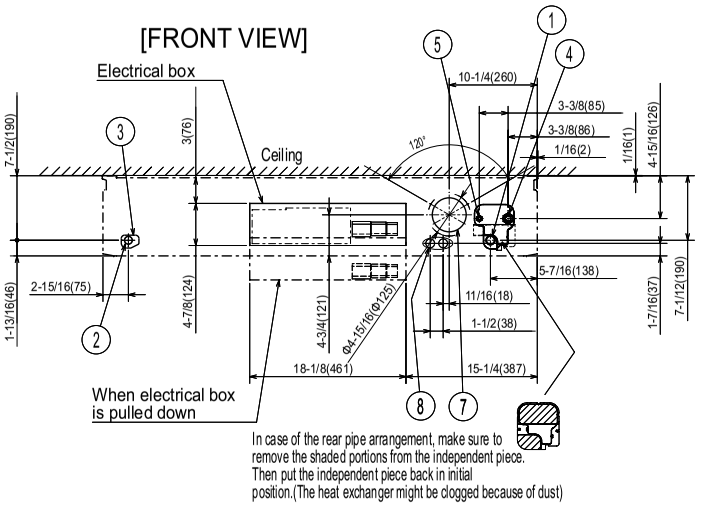
Q···Designed amount of fresh air intake <CMM(CFM)>
A···Static pressure loss of fresh air intake duct system with airflow amount Q <Pa(in.W.G.x10^{-2})>
B···Forced static pressure at air conditioner inlet with airflow amount Q <Pa(in.W.G.x10^{-2})>
C···Static pressure of booster fan with airflow amount Q <Pa(in.W.G.x10^{-2})>
D···Static pressure loss increase amount of fresh air intake duct system for airflow amount Q <Pa(in.W.G.x10^{-2})>
E···Static pressure of indoor unit with airflow amount Q <Pa(in.W.G.x10^{-2})>
Qa···Estimated amount of fresh air intake without D <CMM(CFM)>

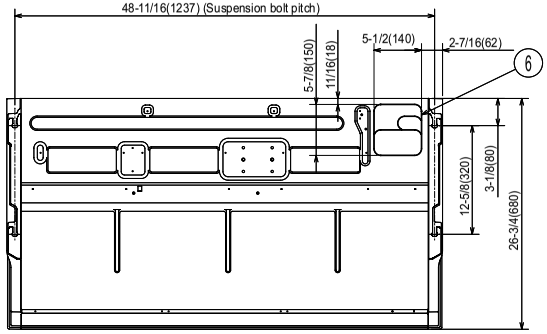
3 OUTLINES AND DIMENSIONS

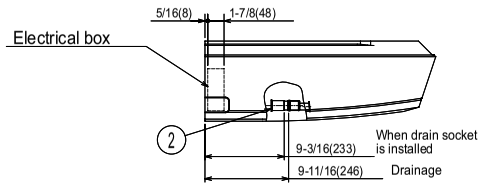
PCFY-P15NKMU-E

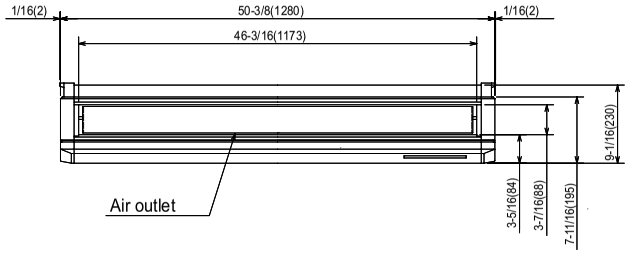
Unit : inch(mm)

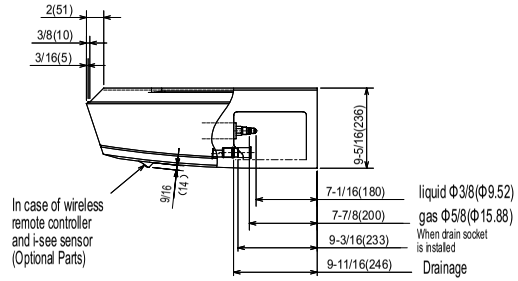


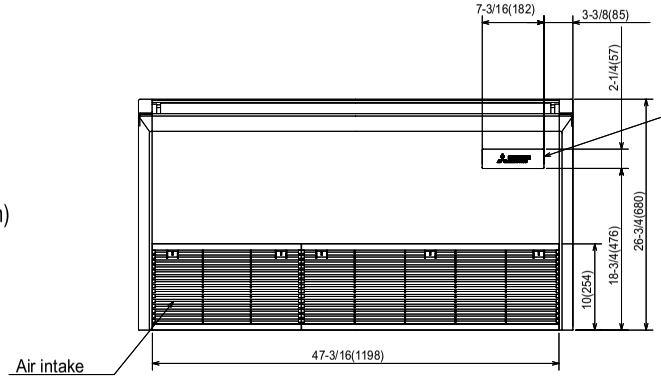


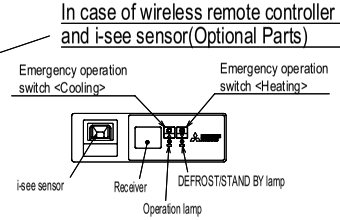












1. Drainage pipe connection(1(26mm)I.D.)
2. Drainage pipe connection(for the left arrangement)
3. Knock out hole for left drain-piping arrangement
4. Refrigerant-pipe connection(gas pipe side/flared connection)
5. Refrigerant-pipe connection(liquid pipe side/flared connection)
6. Knock out hole for upper drain pipe arrangement
7. Knock out hole for fresh air intake Φ3-15/16(Φ100)
8. Knock out hole for wiring arrangement Φ7/8(Φ22)

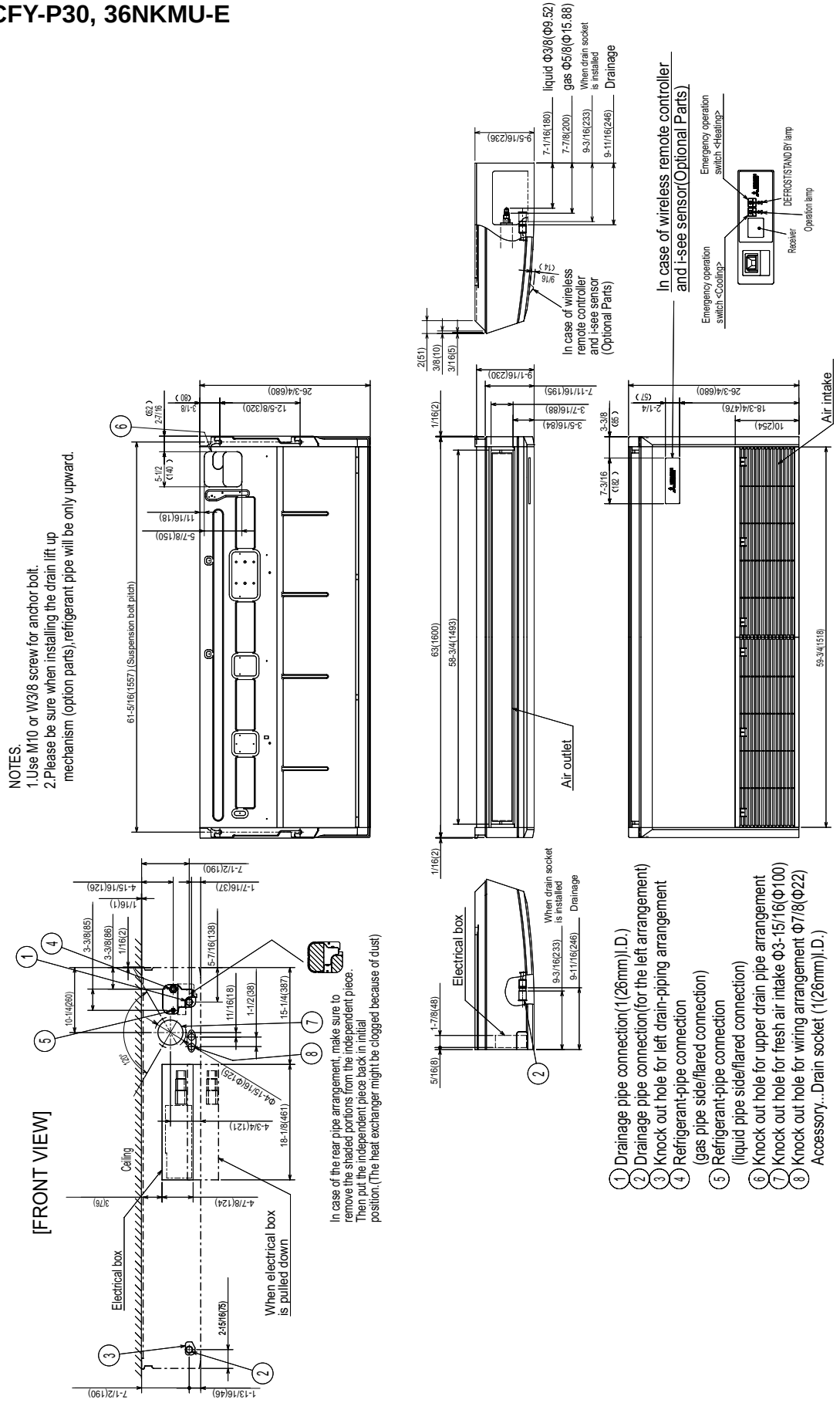
Accessory...Drain socket (1(26mm) I.D.)

NOTES.
1. Use M10 or W3/8 screw for anchor bolt.
2. Please be sure when installing the drain lift up mechanism(option parts),refrigerant pipe will be only upward.

Unit : inch(mm)

PCFY-P30, 36NKMU-E

Unit : inch(mm)



4 WIRING DIAGRAM

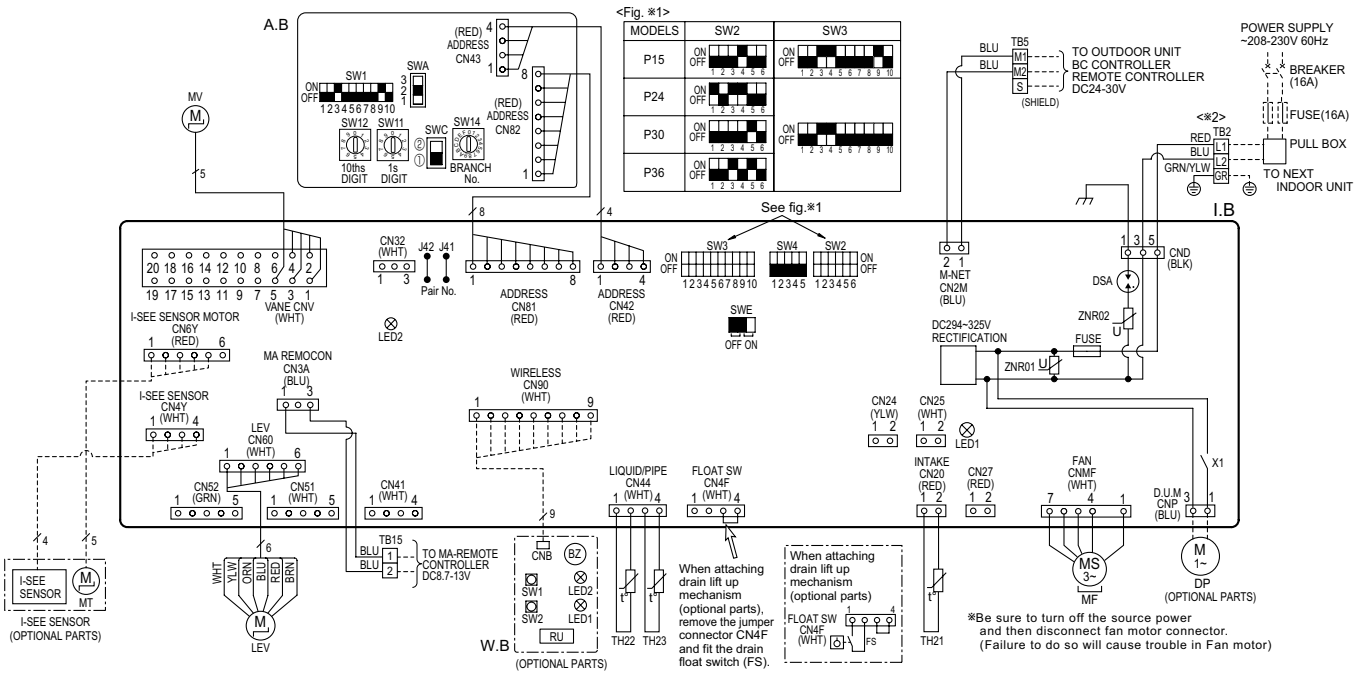
PCFY-P15, 24, 30, 36NKMU-E

[LEGEND]

SYMBOL		NAME		SYMBOL		NAME	
I. B		INDOOR CONTROLLER BOARD		TH22	THERMISTOR	PIPE TEMP. DETECTION / LIQUID (32°F/15KΩ, 77°F/5.4KΩ Detect)
	CN24	CONNECTOR	EXTERNAL HEATER			
	CN27		DAMPER	TH23		PIPE TEMP. DETECTION / GAS (32°F/15KΩ, 77°F/5.4KΩ Detect)
	CN32		REMOTE SWITCH			
	CN51		CENTRALLY CONTROL	A. B		ADDRESS BOARD
	CN52		REMOTE INDICATION		SWA	SWITCH CEILING HEIGHT SELECTOR
	DSA	SURGE ABSORBER			SWC	OPTION SELECTOR
	FUSE	FUSE (T6.3AL250V)			SW1	MODE SELECTION
	SW2	SWITCH	CAPACITY CODE		SW11	ADDRESS SETTING 1s DIGIT
	SW3		MODE SELECTION		SW12	ADDRESS SETTING 10ths DIGIT
	SW4		MODEL SELECTION		SW14	BRANCH No.
	SWE		DRAIN LIFT UP MECHANISM (TEST MODE)	OPTIONAL PARTS		
	X1	AUX. RELAY	DRAIN LIFT UP MECHANISM (OPTIONAL PARTS)		W.B	PCB FOR WIRELESS REMOTE CONTROLLER
	ZNR01,02	VARISTOR			BZ	BUZZER
LEV		LINEAR EXPANSION VALVE			LED1	LED (OPERATION INDICATION : GREEN)
MF		FAN MOTOR			LED2	LED (PREPARATION FOR HEATING : ORANGE)
MV		VANE MOTOR			RU	RECEVING UNIT
MT		I-SEE SENSOR MOTOR(OPTIONAL PARTS)			SW1	EMERGENCY OPERATION (HEAT / DOWN)
TB2		TERMINAL BLOCK	POWER SUPPLY		SW2	EMERGENCY OPERATION (COOL / UP)
TB5			TRANSMISSION	DP		DRAIN LIFT UP MECHANISM
TB15			MA-REMOTE CONTROLLER		FS	DRAIN FLOAT SWITCH
TH21		THERMISTOR	ROOM TEMP. DETECTION (32°F/15KΩ, 77°F/5.4KΩ Detect)			

LED on indoor board for service

Mark	Meaning	Function
LED1	Main power supply	Main Power supply (Indoor unit:208-230V) power on → lamp is lit
LED2	Power supply for MA-Remote controller	Power supply for MA-Remote controller on → lamp is lit



NOTES:

1.At servicing for outdoor unit, always follow the wiring diagram of outdoor unit.

2.In case of using MA-Remote controller, please connect to TB15. (Remote controller wire is non-polar.)

3.In case of using M-NET, please connect to TB5. (Transmission line is non-polar.)

4.Symbol [S] of TB5 is the shield wire connection.

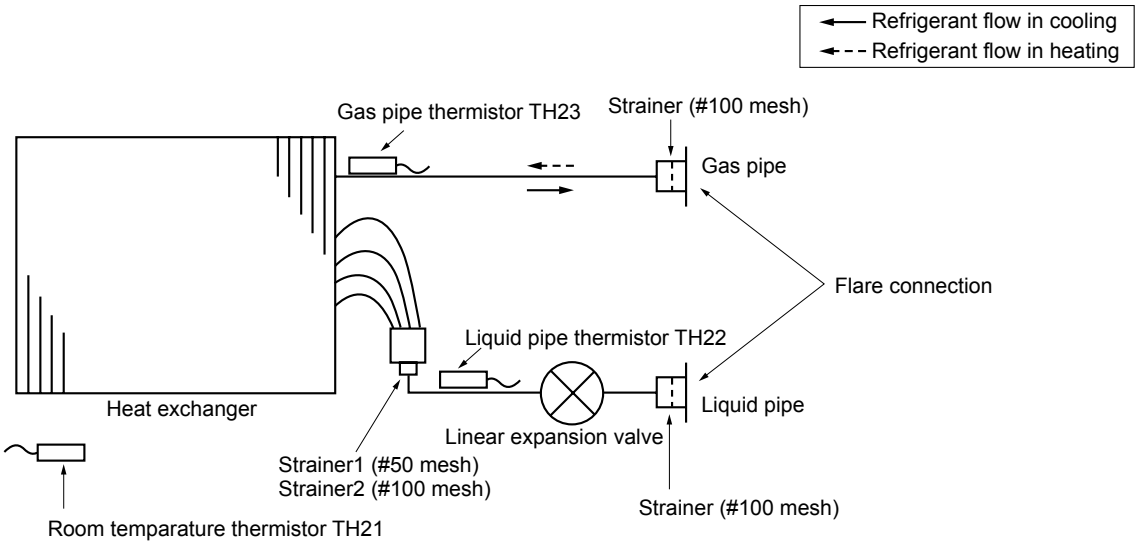
5.Symbols used in wiring diagram above are, ☐☐☐: terminal block, ○○○: connecter.

6.The setting of the SW2 dip switches differs in the capacity. For the detail, refer to fig.※1.

<※2>Use copper supply wires.

5 REFRIGERANT SYSTEM DIAGRAM

PCFY-P15NKMU-E PCFY-P24NKMU-E PCFY-P30NKMU-E PCFY-P36NKMU-E

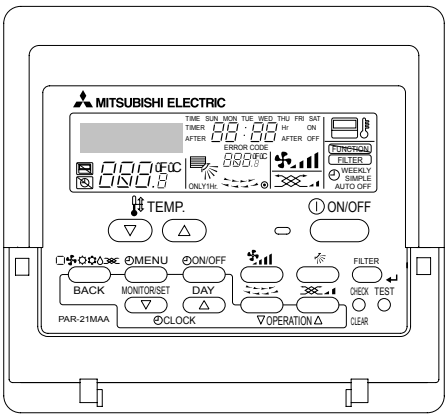


Unit : mm (inch)

Service Ref. / Item	PCFY-P15NKMU-E	PCFY-P24NKMU-E PCFY-P30NKMU-E PCFY-P36NKMU-E
Gas pipe	ø12.7 (1/2)	ø15.88 (5/8)
Liquid pipe	ø6.35 (1/4)	ø9.52 (3/8)

6 MICROPROCESSOR CONTROL

INDOOR UNIT CONTROL
6-1. COOL OPERATION



<How to operate>

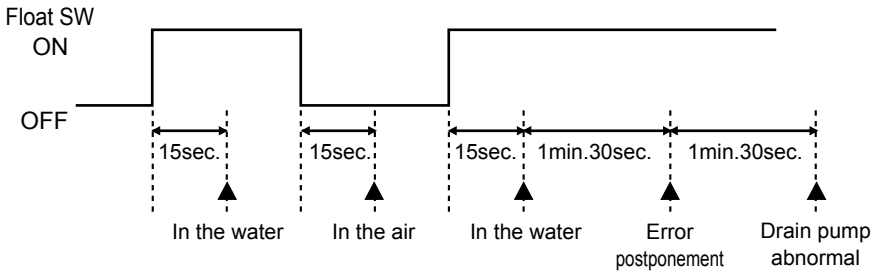
①Press POWER ON/OFF button.

②Press the operation MODE button to display COOL.

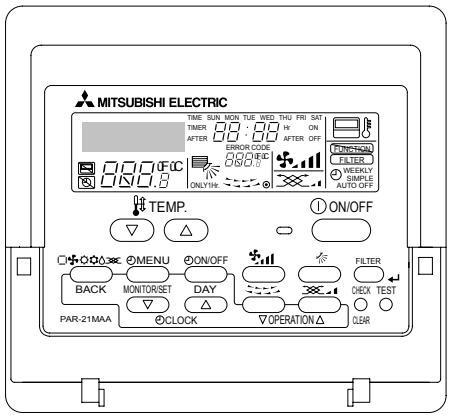
③Press the TEMP. button to set the desired temperature.

NOTE: The set temperature changes 2°F when the ▽ or △ button is pressed one time. Cooling 67 to 87°F

Control modes	Control details	Remarks
1. Thermoregulating function	1-1. Thermoregulating function (Function to prevent restarting for 3 minutes) • Room temperature ≧ desired temperature + 2°F ···Thermo ON • Room temperature ≦ desired temperature ···Thermo OFF	
	1-2. Anti-freezing control Detected condition : When the liquid pipe temp. (TH22) is 32°F or less in 16 minutes from compressors start up, anti-freezing control starts and the thermo OFF. Released condition : The timer which prevents reactivating is set for 3 minutes, and anti-freezing control is cancelled when any one of the following conditions is satisfied. ① Liquid pipe temp. (TH22) turns 50°F or above. ② The condition of the thermo OFF has become complete by thermoregulating, etc. ③ The operation modes became mode other than COOL. ④ The operation stopped.	
2. Fan	By the remote controller setting (switch of 4 speeds+Auto) Type: 4 speeds + Auto type — Fan speed notch: [Low], [Med2], [Med1], [High], [Auto] When [Auto] is set, fan speed is changed depending on the value of: Room temperature - Desired temperature	

Control modes	Control details	Remarks
3. Drain pump	3-1. Drain pump control •Drain pump is always ON during the COOL and DRY mode operation. (Regardless of the thermo ON/OFF) •When the operation mode has changed from the COOL or DRY to the others (including Stop), the drain pump will be kept on for 3 minutes, then turns OFF.	
	Float switch control • Float switch control judges whether the sensor is in the air or in the water by turning the float switch ON/OFF. In the water: Detected that the float switch is ON for 15 seconds. In the air : Detected that the float switch is OFF for 15 seconds. 	
4. Vane (up/down vane change)	(1) Initial setting: Start at COOL mode and horizontal vane. (2) Vane position: Horizontal →Downward A →Downward B →Downward C→Downward D→Swing→Auto (3) Restriction of the downward vane setting When setting the downward vane A, B, C or D in [Med1], [Med2], [Low] or [Auto] of the fan speed notch, the vane changes to horizontal position after 1 hour have passed.	· "ONLY 1 Hr" appears on the wired remote controller.

6-2. DRY OPERATION



<How to operate>

①Press POWER ON/OFF button.

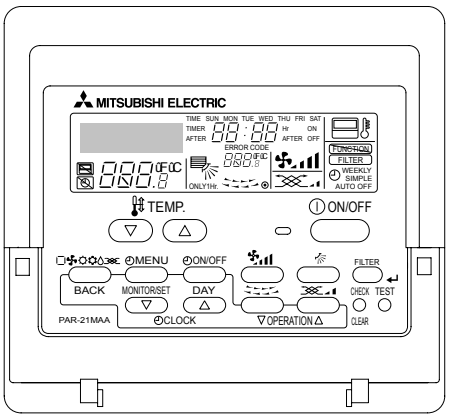
②Press the operation MODE button to display DRY.

③Press the TEMP. button to set the desired temperature.

NOTE: The set temperature changes 2°F when the ▽ or △ button is pressed one time. Dry 67 to 87°F

<table>
<tr><th>Control modes</th><th>Control details</th><th>Remarks</th></tr>
<tr><td>1. Thermo regulating function</td><td>1-1. Thermo regulating function (Function to prevent restarting for 3 minutes)
Setting the Dry thermo by the thermo regulating signal and the room temperature (TH21).
Dry thermo ON Room temperature ≧ desired temperature + 2°F
Dry thermo OFF Room temperature ≧ desired temperature
<table>
<tr><td rowspan="2">Room temperature</td><td colspan="2">3 min. passed since starting operation</td><td rowspan="2">Dry thermo ON time (min)</td><td rowspan="2">Dry thermo OFF time (min)</td></tr>
<tr><td>Thermo regulating signal</td><td>Room temperature (T1)</td></tr>
<tr><td rowspan="5">Over 64°F</td><td rowspan="4">ON</td><td>T1≧ 83°F</td><td>9</td><td>3</td></tr>
<tr><td>83°F > T1 ≧ 79°F</td><td>7</td><td>3</td></tr>
<tr><td>79°F > T1 ≧ 75°F</td><td>5</td><td>3</td></tr>
<tr><td>75°F > T1</td><td>3</td><td>3</td></tr>
<tr><td>OFF</td><td>Unconditional</td><td>3</td><td>10</td></tr>
<tr><td>Less than 64°F</td><td colspan="4">Dry thermo OFF</td></tr>
</table>
1-2. Freeze prevention control
No control function</td><td></td></tr>
<tr><td>2. Fan</td><td>Indoor fan operation controlled depending on the compressor conditions.
<table>
<tr><td>Dry thermo</td><td colspan="2">Fan speed notch</td></tr>
<tr><td>ON</td><td colspan="2">[Low]</td></tr>
<tr><td rowspan="2">OFF</td><td>Excluding the following</td><td>Stop</td></tr>
<tr><td>Room temp. < 64°F</td><td>[Low]</td></tr>
</table>
Note: Remote controller setting is not acceptable.</td><td></td></tr>
<tr><td>3. Drain pump</td><td>Same control as COOL operation</td><td></td></tr>
<tr><td>4. Vane
(up/down vane change)</td><td>Same control as COOL operation</td><td></td></tr>
</table>

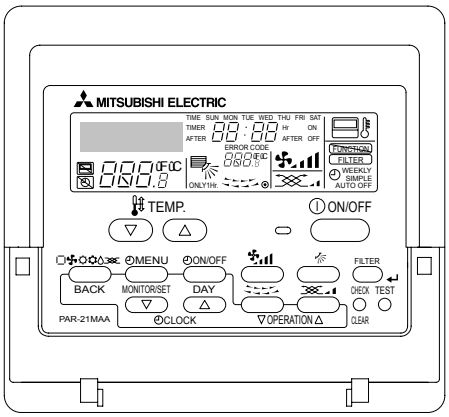
6-3. FAN OPERATION



<How to operate>
①Press POWER ON/OFF button.
②Press the operation MODE button to display FAN.

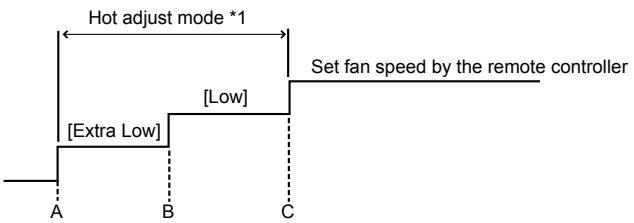
Control modes	Control details	Remarks
1. Fan	Set by remote controller. Type: 4 speeds + Auto type; Fan speed notch: [Low], [Med2], [Med1], [High], [Auto] When [Auto] is set, fan speed becomes [Low].	
2. Drain pump	2-1. Drain pump control The drain pump turns ON for the specified amount of time when any of the following conditions is met: ① ON for 3 minutes after the operation mode is switched from COOL or DRY to another operation mode (FAN). ② ON for 6 minutes after the float switch is submerged in the water when the float swich control judges the sensor is in the water.	
	2-2. Float switch control • Float switch control judges whether the sensor is in the air or in the water by turning the float switch ON/OFF. In the water : Detected that the float switch is ON for 15 seconds. In the air : Detected that the float switch is OFF for 15 seconds.	· Same control as COOL operation
3. Vane (up/down vane change)	Same as the control performed during the COOL operation, but with no restriction on the vane's downward blow setting	

6-4. HEAT OPERATION



<How to operate>
①Press POWER ON/OFF button.
②Press the operation MODE button to display HEAT.
③Press the TEMP. button to set the desired temperature.
NOTE: The set temperature changes 2°F when the ▽ or △ button is pressed one time. Heating 63 to 83°F.

<Display in HEAT operation>
[DEFROST]
The [DEFROST] symbol is only displayed during the defrost operation.
[STANDBY]
The [STANDBY] symbol is only displayed during the hot adjust mode.

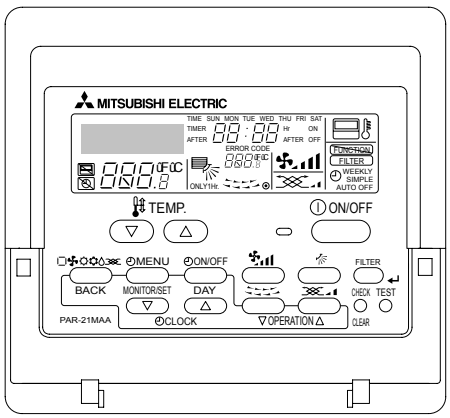
Control modes	Control details	Remarks
1. Thermoregulating function	1-1. Thermoregulating function (Function to prevent restarting for 3 minutes) • Room temperature ≦ desired temperature -2°F ···Thermo ON • Room temperature ≦ desired temperature ···Thermo OFF	
2. Fan	By the remote controller setting (switch of 4 speeds+Auto) Type: 4 speeds + Auto type — Fan speed notch: [Low], [Med2], [Med1], [High], [Auto] When [Auto] is set, fan speed is changed depending on the value of: Desired temperature - Room temperature Give priority to under-mentioned controlled mode 2-1. Hot adjust mode 2-2. Residual heat exclusion mode 2-3. Thermo OFF mode (When the compressor off by the thermoregulating) 2-4. Cool air prevention mode (Defrosting mode)	
	2-1. Hot adjust mode The fan controller becomes the hot adjuster mode for the following conditions. ①When starting the HEAT operation ②When the thermoregulating function changes from OFF to ON. ③When release the HEAT defrosting operation  A: Hot adjust mode starts. B: 5 minutes have passed since the condition A or the indoor liquid pipe temperature turned 95°F or more. C: 2 minutes have passed since the condition B. (Terminating the hot adjust mode)	*1 "STAND BY" will be displayed during the hot adjust mode.
	2-2. Residual heat exclusion mode When the condition changes the auxiliary heater ON to OFF (thermoregulating or operation stop, etc), the indoor fan operates in [Low] mode for 1 minute.	· This control is same for the model without auxiliary heater.

To be continued on the next page.

From the preceding page

Control modes	Control details	Remarks
2. Fan	2-3. Thermo OFF mode When the thermoregulating function changes to OFF, the indoor fan operates in [Extra low].	
	2-4. Heat defrosting mode The indoor fan stops.	
3. Drain pump	3-1. Drain pump control The drain pump turns ON for the specified amount of time when any of the following conditions is met: ① ON for 3 minutes after the operation mode is switched from COOL or DRY to another operation mode (FAN). ② ON for 6 minutes after the float switch is submerged in the water when the float swich control judges the sensor is in the water.	
	3-2. Float switch control • Float switch control judges whether the sensor is in the air or in the water by turning the float switch ON/OFF. In the water: Detected that the float switch is ON for 15 seconds. In the air : Detected that the float switch is OFF for 15 seconds.	· Same control as COOL operation
4. Vane control (Up/down vane change)	(1) Initial setting: OFF → HEAT···[last setting] When the last setting is [Swing] ··· [Downward D] When changing the mode from exception of HEAT to HEAT operation ···[Downward D] (2) Vane position: Horizontal →Downward A →Downward B →Downward C→Downward D→Swing→Auto (3) Restriction of vane position ① The vane is horizontally fixed for the following modes. (The control by the remote controller is temporally invalidated and control by the unit.) •Thermo OFF •Hot adjust [Extra low] mode •Heat defrost mode	

6-5. AUTO OPERATION [AUTOMATIC COOL/HEAT CHANGE OVER OPERATION]



<How to operate>

①Press POWER ON/OFF button.

②Press the operation MODE button to display AUTO.

③Press the TEMP. button to set the desired temperature.

NOTE: The set temperature changes 2°F when the ▽ or △ button is pressed one time. Automatic 67 to 83°F

Control modes	Control details	Remarks
1. Initial value of operation mode	HEAT mode for room temperature < Desired temperature COOL mode for room temperature ≧ Desired temperature	
2. Mode change	(1) HEAT mode → COOL mode Room temperature ≧ Desired temperature + 3°F. or 3 min. has passed (2) COOL mode → HEAT mode Room temperature ≧ Desired temperature - 3°F. or 3 min. has passed	
3. COOL mode	Same control as cool operation	
4. HEAT mode	Same control as heat operation	

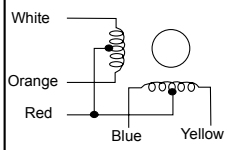
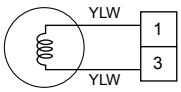
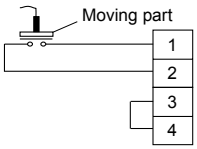
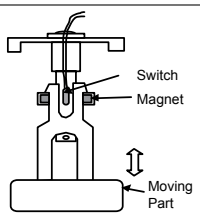
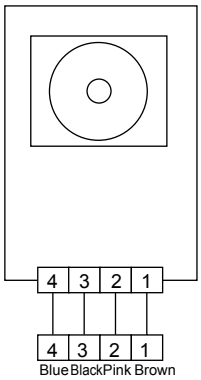
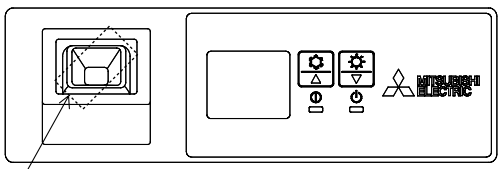
6-6. WHEN UNIT IS STOPPED

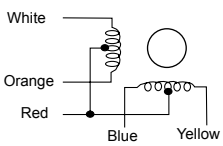
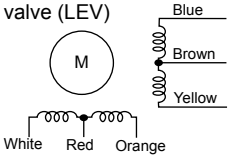
Control modes	Control details	Remarks
1. Drain pump	1-1. Drain pump control The drain pump turns ON for the specified amount of time when any of the following conditions is met: ① ON for 3 minutes after the operation mode is switched from COOL or DRY to another operation mode (FAN). ② ON for 6 minutes after the float switch is submerged in the water when the float swich control judges the sensor is in the water.	
	1-2. Float switch control • Float switch control judges whether the sensor is in the air or in the water by turning the float switch ON/OFF. In the water : Detected that the float switch is ON for 15 seconds. In the air : Detected that the float switch is OFF for 15 seconds.	· Same control as COOL operation

7 TROUBLESHOOTING

7-1. HOW TO CHECK THE PARTS

PCFY-P15NKMU-E PCFY-P24NKMU-E PCFY-P30NKMU-E PCFY-P36NKMU-E

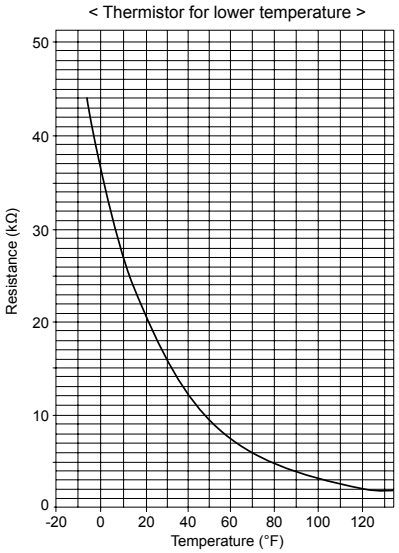
<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Room temperature thermistor (TH21)
Liquid pipe thermistor (TH22)
Gas pipe thermistor (TH23)</td><td>Disconnect the connector then measure the resistance using a tester.
(At the ambient temperature 50°F~86°F)
<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>4.3kΩ~9.6kΩ</td><td>Open or short</td></tr></table>(Refer to the next page for a detail.)</td></tr>
<tr><td>Vane motor (MV)
 
</td><td>Measure the resistance between the terminals using a tester.
(At the ambient temperature of 68°F~86°F)
<table><tr><th>Connector</th><th>Normal</th><th>Abnormal</th></tr><tr><td>Red - Yellow</td><td rowspan="4">300Ω</td><td rowspan="4">Open or short</td></tr><tr><td>Red - Blue</td></tr><tr><td>Red - Orange</td></tr><tr><td>Red - White</td></tr></table></td></tr>
<tr><td>Drain pump (DP) (Option)
 
</td><td>Measure the resistance between the terminals using a tester.
(Winding temperature 68°F)
<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>290Ω</td><td>Open or short</td></tr></table></td></tr>
<tr><td>Drain float switch (FS) (Option)
 
</td><td>Measure the resistance between the terminals using a tester.
<table><tr><th>State of moving part</th><th>Normal</th><th>Abnormal</th></tr><tr><td>UP</td><td>Short</td><td>Other than short</td></tr><tr><td>DOWN</td><td>Open</td><td>Other than open</td></tr></table> 
</td></tr>
<tr><td>i-see sensor (Option)
 
</td><td>①Turn on the indoor unit with the black plastic tape on the outside of i-see sensor controller board.
②i-see sensor rotates then pull out the connector of motor for i-see sensor.
③With electricity being turned on, measure the power voltage between connectors with tester.
 

i-see sensor (At the ambient temperature of 50°F~104°F)
<table><tr><th>i-see sensor connector</th><th>Normal</th><th>Abnormal</th></tr><tr><td>②(–)—④(+)</td><td>DC 1.857V~ 3.132V</td><td>Other than the normal</td></tr><tr><td>①(+)—②(–)</td><td>DC 0.939V~ 1.506V</td><td>Other than the normal</td></tr></table>**NOTE** : Be careful of handing such a static electricity.</td></tr>
<tr><td>Vane motor for i-see sensor (Option)
 
</td><td>Measure the resistance between the terminals using a tester.
(At the ambient temperature of 68°F~86°F)
<table><tr><th>Connector</th><th>Normal</th><th>Abnormal</th></tr><tr><td>Red - Yellow</td><td rowspan="4">250Ω</td><td rowspan="4">Open or short</td></tr><tr><td>Red - Blue</td></tr><tr><td>Red - Orange</td></tr><tr><td>Red - White</td></tr></table></td></tr>
<tr><td>Linear expansion valve (LEV)
 
</td><td>Disconnect the connector then measure the resistance valve using a tester.
<table><tr><th colspan="4">Normal</th><th>Abnormal</th></tr><tr><td>White-Red</td><td>Yellow-Brown</td><td>Orange-Red</td><td>Blue-Brown</td><td rowspan="2">Open or short</td></tr><tr><td colspan="4">200Ω ±10%</td></tr></table>Refer to 7-1-2.</td></tr>
</table>

7-1-1. Thermistor

<Thermistor characteristic graph>

Thermistor for lower temperature	Room temperature thermistor (TH21) Liquid pipe temperature thermistor (TH22) Gas pipe temperature thermistor (TH23)



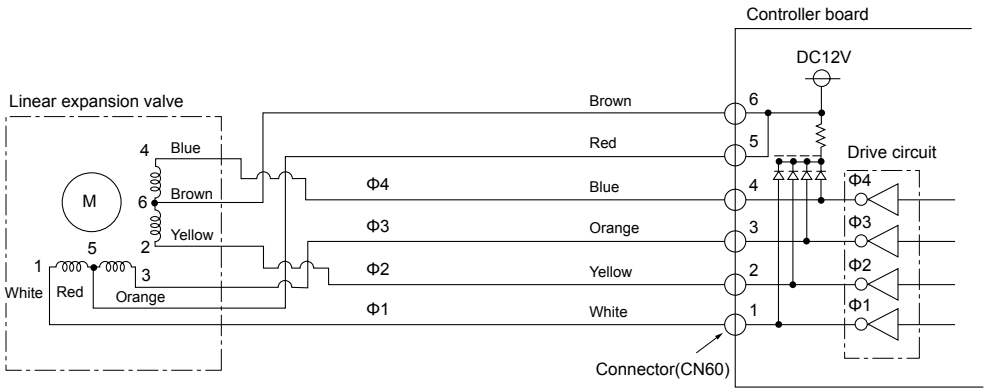
Thermistor R_0=15kΩ ± 3%
Fixed number of B=3480 ± 2%

$$Rt=15\exp\{3480(\frac{1}{273+(t-32)/1.8}-\frac{1}{273})\}$$

30°F	15.8kΩ
50°F	9.6kΩ
70°F	6.0kΩ
80°F	4.8kΩ
90°F	3.9kΩ
100°F	3.2kΩ

7-1-2. Linear expansion valve

① Operation summary of the linear expansion valve
• Linear expansion valve open/close through stepping motor after receiving the pulse signal from the indoor controller board.
• Valve position can be changed in proportion to the number of pulse signals.
<Connection between the indoor controller board and the linear expansion valve>



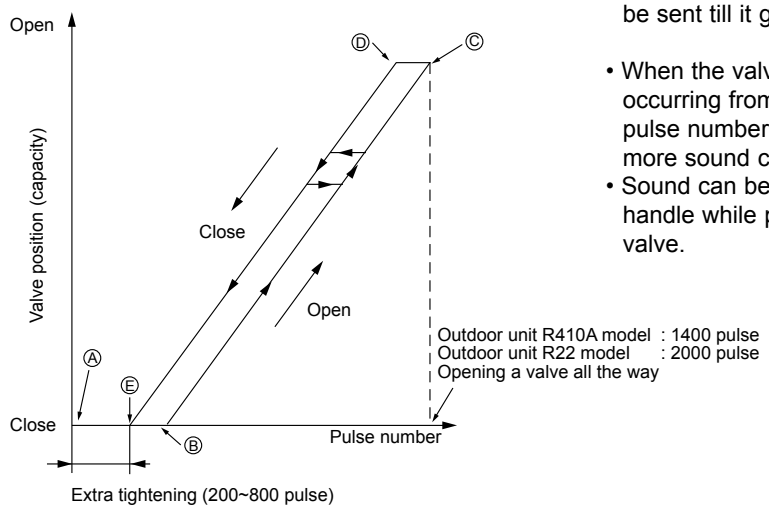
<Output pulse signal and the valve operation>

Output (Phase)	Output			
	1	2	3	4
Φ1	ON	OFF	OFF	ON
Φ2	ON	ON	OFF	OFF
Φ3	OFF	ON	ON	OFF
Φ4	OFF	OFF	ON	ON

Closing a valve : 1 → 2 → 3 → 4 → 1
Opening a valve : 4 → 3 → 2 → 1 → 4
The output pulse shifts in above order.

Note:
- When linear expansion valve operation stops, all output phase become OFF.
- At phase interruption or when phase does not shift in order, motor does not rotate smoothly and motor will lock and vibrate.

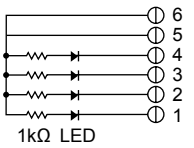
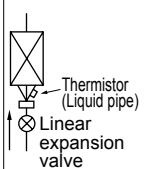
② Linear expansion valve operation



- When the switch is turned on, 2200 pulse closing valve signal will be sent till it goes to point Ⓐ in order to define the valve position.

- When the valve moves smoothly, there is no sound or vibration occurring from the linear expansion valves, however, when the pulse number moves from Ⓔ to Ⓐ or when the valve is locked, more sound can be heard than in a normal situation.
- Sound can be detected by placing the ear against the screw driver handle while putting the screw driver tip to the linear expansion valve.

③ Trouble shooting

Symptom	Check points	Countermeasures
Operation circuit failure of the micro processor	Disconnect the connector on the controller board, then connect LED for checking.  When power is turned on, pulse signals will be output for 10 seconds. There must be some defects in the operation circuit if the LED does not light while the signals are output or keeps lighting even after the signals stop.	Exchange the indoor controller board at drive circuit failure.
Linear expansion valve mechanism is locked.	Motor will idle and make a ticking noise when the motor is operated while the linear expansion valve is locked. This ticking sound is the sign of the abnormality.	Exchange the linear expansion valve.
Short or breakage of the motor coil of the linear expansion valve	Measure the resistance between each coil (white-red, yellow-brown, orange-red, blue-brown) using a tester. It is normal if the resistance is in the range of 200Ω ±10%.	Exchange the linear expansion valve.
Valve does not close completely.	To check the linear expansion valve, operate the indoor unit in fan mode and at the same time operate other indoor units in cooling mode, then check the pipe temperature <liquid pipe temperature> of the indoor unit by the outdoor multi controller board operation monitor. During fan operation, linear expansion valve is closed completely and if there is any leaking, detecting temperature of the thermistor will go lower. If the detected temperature is much lower than the temperature indicated in the remote controller, it means the valve is not closed all the way.  It is not necessary to exchange the linear expansion valve, if the leakage is small and not affecting normal operation.	If large amount of refrigerant is leaked, exchange the linear expansion valve.
Wrong connection of the connector or contact failure	Check the color of lead wire and missing terminal of the connector.	Disconnect the connector at the controller board, then check the continuity.

7-1-3. DC Fan motor (fan motor/indoor controller circuit board)

Check method of DC fan motor (fan motor/indoor controller circuit board)

① Notes

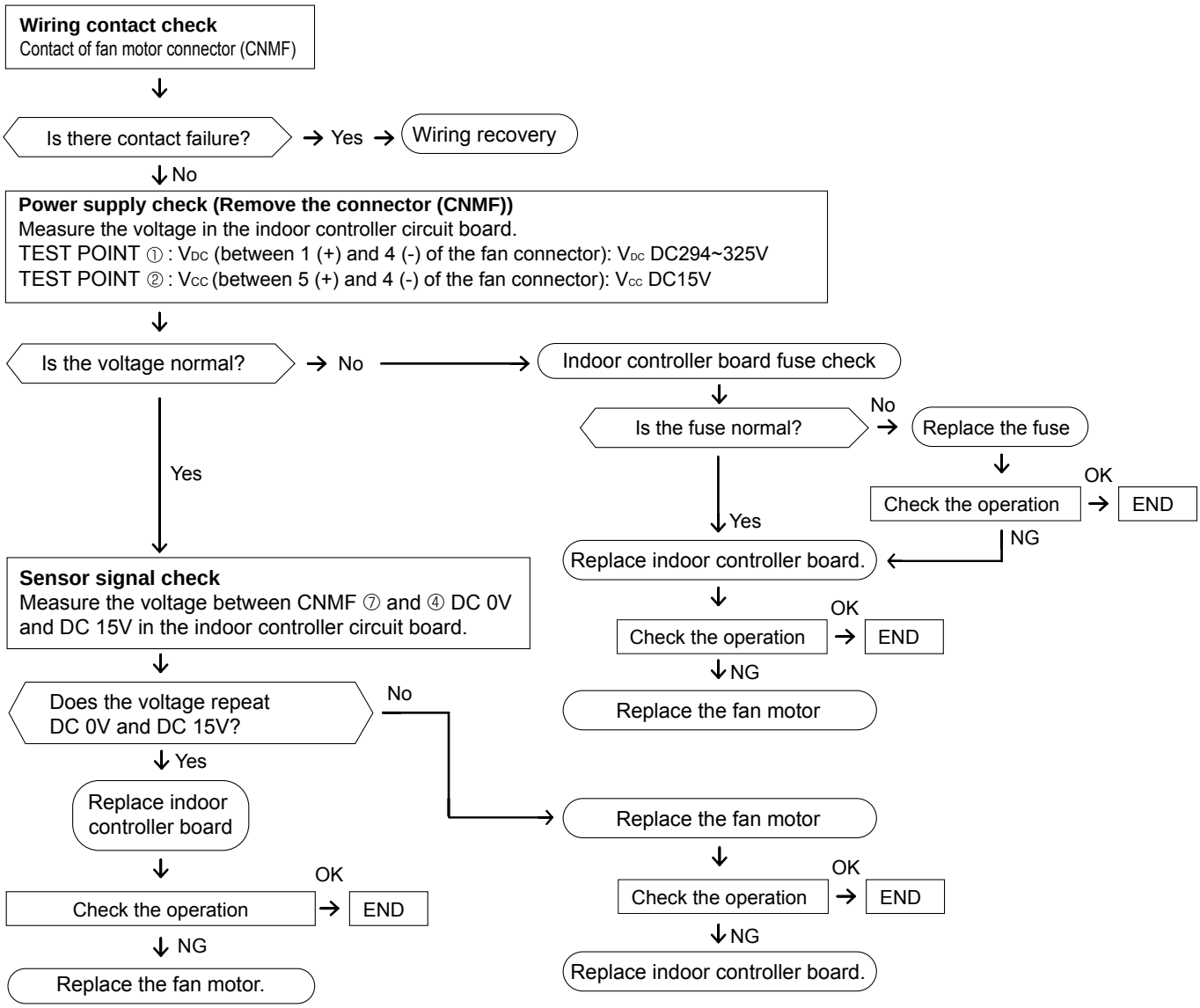
· High voltage is applied to the connecter (CNMF) for the fan motor. Pay attention to the service.

· Do not pull out the connector (CNMF) for the motor with the power supply on.

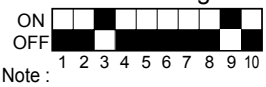
(It causes trouble of the indoor controller circuit board and fan motor.)

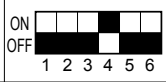
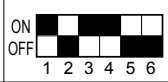
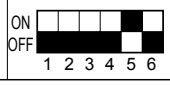
② Self check

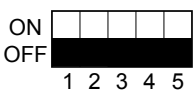
Symptom : The indoor fan cannot turn around.



7-2. FUNCTION OF DIP SWITCH

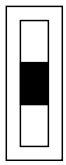
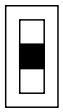
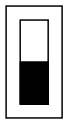
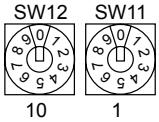
<table>
<tr><th rowspan="2">Switch</th><th rowspan="2">Pole</th><th rowspan="2">Function</th><th colspan="2">Operation by switch</th><th rowspan="2">Effective timing</th><th rowspan="2">Remarks</th></tr>
<tr><th>ON</th><th>OFF</th></tr>
<tr><td rowspan="10">SW1
Function setting</td><td>1</td><td>Thermistor <Room temperature detection> position</td><td>Built-in remote controller</td><td>Indoor unit</td><td rowspan="10">Under suspension</td><td rowspan="10">Address board
<Initial setting>
 

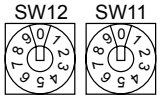
Note :
※1 Fan operation at heating mode
※2 Thermo ON operation at heating mode
※3
<table><tr><td>SW1-7</td><td>SW1-8</td><td></td></tr><tr><td>OFF</td><td>OFF</td><td>Extra low</td></tr><tr><td>ON</td><td>OFF</td><td>Low</td></tr><tr><td>OFF</td><td>ON</td><td>Setting airflow</td></tr><tr><td>ON</td><td>ON</td><td>Stop</td></tr></table></td></tr>
<tr><td>2</td><td>Filter clogging detection</td><td>Provided</td><td>Not provided</td></tr>
<tr><td>3</td><td>Filter cleaning</td><td>2,500 hr</td><td>100 hr</td></tr>
<tr><td>4</td><td>Fresh air intake</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>5</td><td>Switching remote display</td><td>Thermo ON signal display</td><td>Indicating fan operation ON/OFF</td></tr>
<tr><td>6</td><td>Humidifier control</td><td>Always operated while the heat in ON ※1</td><td>Operated depends on the condition ※2</td></tr>
<tr><td>7</td><td rowspan="2">Airflow set in case of Heat thermo OFF at heating mode</td><td>Low ※3</td><td>Extra low ※3</td></tr>
<tr><td>8</td><td>Setting air flow ※3</td><td>Depends on SW1-7</td></tr>
<tr><td>9</td><td>Auto restart function</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>10</td><td>Power ON/OFF by breaker</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>SW2
Capacity code setting</td><td>1~6</td><td colspan="3"><table><tr><td>Capacity</td><td>SW 2</td><td>Capacity</td><td>SW 2</td></tr><tr><td>P15</td><td> 
</td><td>P24</td><td> 
</td></tr><tr><td>P30</td><td> 
</td><td>P36</td><td> 
</td></tr></table></td><td>Before power supply ON</td><td>Indoor controller board
Set while the unit is off.
<Initial setting>
Set for each capacity.</td></tr>
<tr><td rowspan="10">SW3
Function setting</td><td>1</td><td>Heat pump/Cooling only</td><td>Cooling only</td><td>Heat pump</td><td rowspan="10">Under suspension</td><td rowspan="10">Indoor controller board
Set while the unit is off.
<Initial setting>
 

Note :
※4 SW3-5
※5 Please do not use SW-3-9,10.
SW9 setting
P15: ON
P24,P30,P36: OFF
※6 Each angle can be used only 1 hour when fan speed setting Low and Middle 1,2</td></tr>
<tr><td>2</td><td>Louver</td><td>Available</td><td>Not available</td></tr>
<tr><td>3</td><td>Vane</td><td>Available</td><td>Not available</td></tr>
<tr><td>4</td><td>Vane swing function in heating (wave-flow)</td><td>Available</td><td>Not available</td></tr>
<tr><td>5</td><td>Vane horizontal angle</td><td>Second setting ※4</td><td>First setting ※4</td></tr>
<tr><td>6</td><td>Vane cooling limit angle setting</td><td>Horizontal</td><td>Setting A,B,C,D</td></tr>
<tr><td>7</td><td>Changing the opening of linear expansion valve</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>8</td><td>4-deg up (Heating mode)</td><td>Not effective</td><td>Effective</td></tr>
<tr><td>9</td><td>Superheat setting temperature ※5</td><td>—</td><td>—</td></tr>
<tr><td>10</td><td>Sub cool setting temperature ※5</td><td>—</td><td>—</td></tr>
<tr><td>SW4
Model Selection</td><td>1~5</td><td colspan="3">In case of replacing the indoor controller board, make sure to set the switch to the initial setting, which is shown below.
 
</td><td>Before power supply ON</td><td>Indoor controller board</td></tr>
</table>

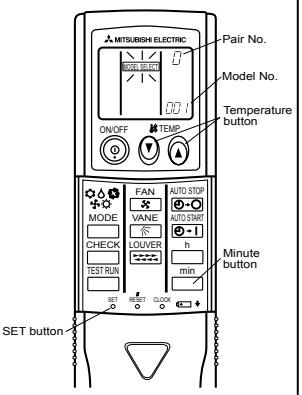
Note : ※4 SW3-5

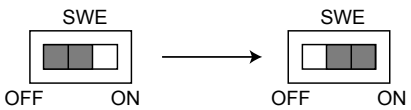
SW3-5	Vane setting	Initial setting	Setting	Vane position
OFF	Set up ①	●	Standard	Standard
ON	Set up ②		Less draft	Upward position than the standard

<table>
<tr><th>Switch</th><th>Pole</th><th>Operation by switch</th><th>Effective timing</th><th>Remarks</th></tr>
<tr><td>SWA
Ceiling height selector</td><td>1~3</td><td>(High ceiling) 3
(Standard) 2
(Silent) 1
 
* Ceiling height can be changed depending on SWA setting.
<table><tr><td>SWA</td><td>①
Silent</td><td>②
Standard</td><td>③
High ceiling</td></tr><tr><td>P15, P24</td><td>8.2ft.(2.5m)</td><td>8.9ft.(2.7m)</td><td>11.5ft.(3.5m)</td></tr><tr><td>P30, P36</td><td>8.5ft.(2.6m)</td><td>9.8ft.(3.0m)</td><td>13.8ft.(4.2m)</td></tr></table></td><td rowspan="2">Under operation or suspension</td><td>Address board
<Initial setting>
3
2
1
  </td></tr>
<tr><td>SWC
Option selector</td><td>2</td><td>② オプ (Option)
① 標 (Standard)
 
* In this model it is not necessary to change SWC to the option side.</td><td>Address board
<Initial setting>
② オプ
① 標
  </td></tr>
<tr><td>SW11
1s digit address setting
SW12
10ths digit address setting</td><td>Rotary switch</td><td> 

How to set address
Example : If address is "3", remain SW12 (for over 10) at "0", and match SW11 (for 1 to 9) with "3".</td><td rowspan="2">Before power supply ON</td><td>Address board
Address can be set while the unit is stopped.
<Initial setting>
 
</td></tr>
<tr><td>SW14
Branch No. setting</td><td>Rotary switch</td><td> 

How to set branch number SW14 (Series R2 only)
Match the indoor unit's refrigerant pipe with the BC contoller's end connection number
Remain other than series R2 at "0".</td><td>Address board
<Initial setting>
 
</td></tr>
</table>

<table>
<tr><th>Switch</th><th>Pole</th><th>Operation by switch</th><th>Effective timing</th><th>Remarks</th></tr>
<tr>
<td>J41, J42
Wireless remote controller Pair No.</td>
<td>Jumper</td>
<td>
• To operate each indoor unit by each remote controller when installed 2 indoor units or more are near, Pair No. setting is necessary.
① Pair No. setting is available with the 4 patterns (Setting patters A to D).
② Make setting for J41, J42 of indoor controller board and the Pair No. of wireless remote controller.
• You may not set it when operating it by 1 remote controller.
① Setting for indoor unit
Jumper wire J41, J42 on the indoor controller board are cut according to the table below.
② Wireless remote controller pair number:
Setting operation
1. Press the SET button (using a pointed implement). Check that the remote controller's display has stopped before continuing.
MODEL SELECT flashes, and the model No. (3 digits) appears (steadily-lit).
2. Press the MINUTE button twice. The pair number appears flashing.
3. Press the temperature ▽ △ buttons to select the pair number to set.
4. Press the SET button (using a pointed implement). The set pair number is displayed (steadily-lit) for 3 seconds, then disappears.
<table>
<tr><th rowspan="2">Setting pattern</th><th colspan="2">Indoor controller Jumper wire</th><th rowspan="2">Pair No. of wireless remote controller ※</th><th rowspan="2"></th></tr>
<tr><th>J41</th><th>J42</th></tr>
<tr><td>A</td><td>—</td><td>—</td><td>0</td><td>Factory setting</td></tr>
<tr><td>B</td><td>Cut</td><td>—</td><td>1</td><td>—</td></tr>
<tr><td>C</td><td>—</td><td>Cut</td><td>2</td><td>—</td></tr>
<tr><td>D</td><td>Cut</td><td>Cut</td><td>3</td><td>—</td></tr>
</table>
※ Pair No.4-9 of wireless remote controller is setting pattern D.
</td>
<td>Under operation or suspension</td>
<td>
<Initial setting>
Pattern A


</td>
</tr>
<tr>
<td>SWE
Test run for Drain pump (Option)</td>
<td>Connector</td>
<td>
Drain pump and fan are activated simultaneously after the connector SWE is set to ON and turn on the power.


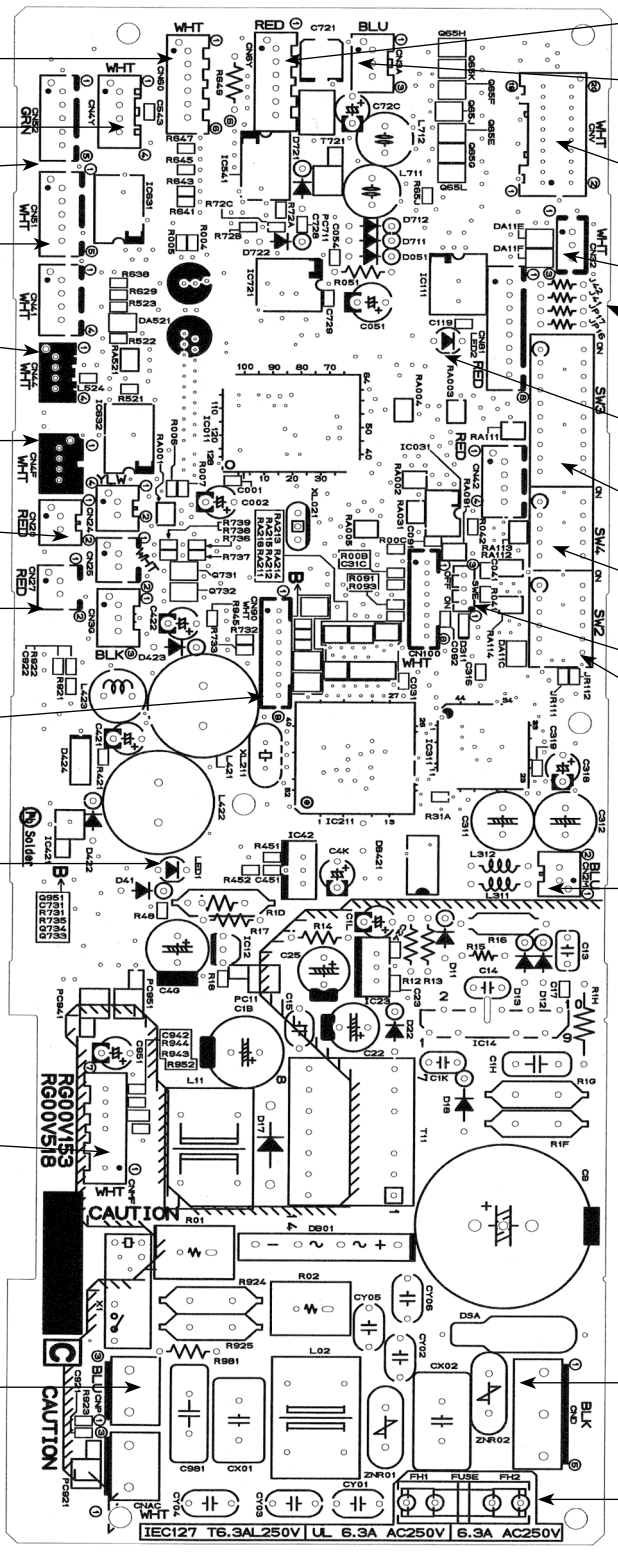
The connector SWE is set to OFF after test run.
</td>
<td>Under operation</td>
<td>
<Initial setting>


</td>
</tr>
</table>

7-3. TEST POINT DIAGRAM

7-3-1. Indoor controller board

PCFY-P15NKMU-E PCFY-P24NKMU-E PCFY-P30NKMU-E PCFY-P36NKMU-E



CN60
Linear expansion valve (LEV) output
12VDC pulse output

CN4Y
i-See sensor

CN52
Remote indicator

CN51
Centrally controlled

CN44
Pipe temperature thermistor
①-② : Liquid (TH22)
③-④ : Gas (TH23)

CN4F
Drain float switch (FS)

CN20
Room temperature thermistor (TH21)

CN27
Damper signal output
12VDC(① : +)

CN90
Connect to the wireless remote controller board (W.B)

LED1
Main power supply
(Indoor unit : 208-230V)

CNMF
Connect to the fan motor (MF)
①-④ : DC294~325V
⑤-④ : DC15V
⑥-④ : DC0~6V
⑦-④ : DC0 or DC15V (Stop)
DC7.5V (Operation)
(12VDC pulse)

CNP
Drain pump output (DP)
①-③ : 208-230VAC

CN6Y
i-see sensor motor output
12VDC pulse output

CN3A
Connect to the terminal block (TB15)
(MA-Remote controller connecting wire)
① - ③ : 8.7-13V DC (Pin① (+))

CNV
Vane motor output
12VDC pulse

CN32
Remote switch

Jumper wire J41, J42
Pair No.setting for wireless remote controller

LED2
Power supply for MA-Remote controller

SW3
Function setting

SW4
Model selection

SWE
Test run(Drain pump)

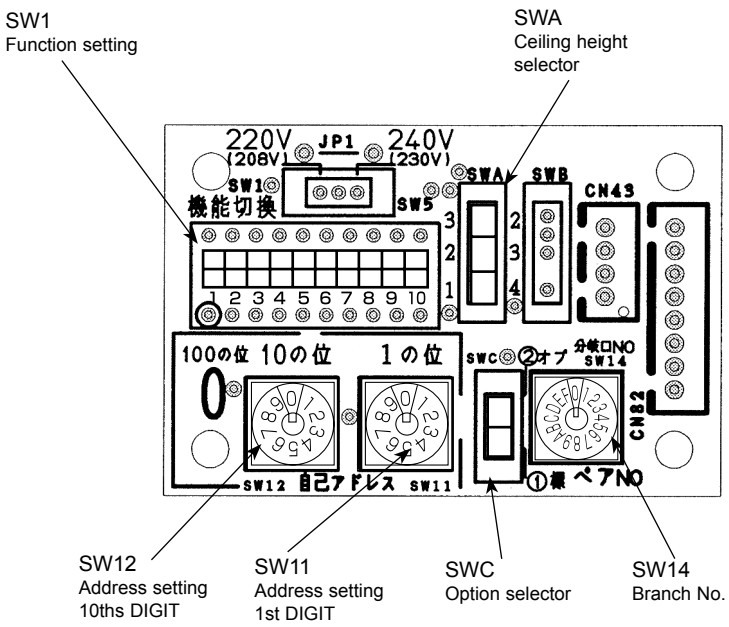
SW2
Capacity setting

CN2M
Connect to the terminal block (TB5)
(M-NET transmission connecting wire)
24-30VDC (non-polar)

CND
Power supply for indoor controller board
③ - ⑤ : 208-230VAC

FUSE
6.3A 250V

7-3-2. Address board
PCFY-P15NKMU-E
PCFY-P24NKMU-E
PCFY-P30NKMU-E
PCFY-P36NKMU-E

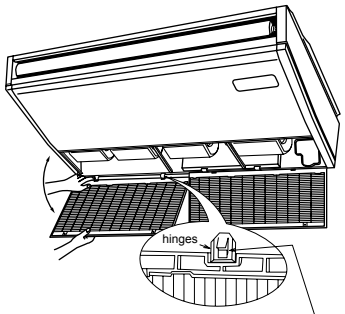
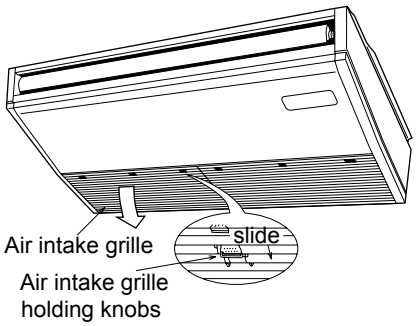
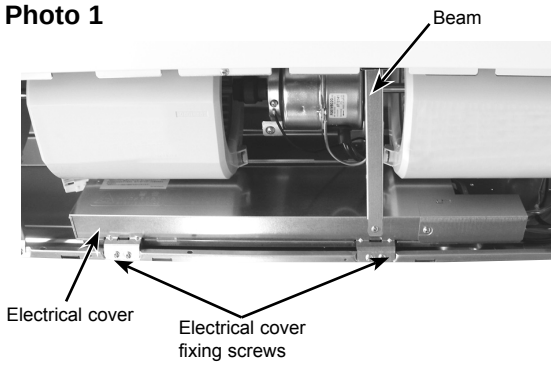
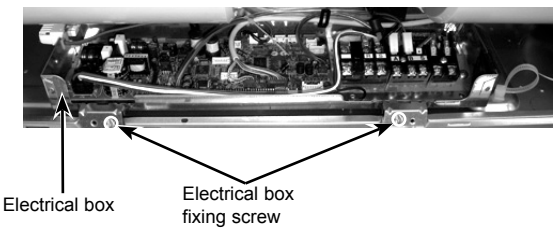
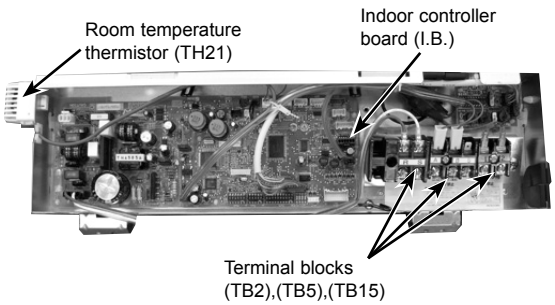


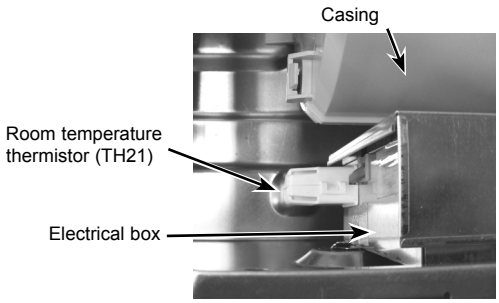
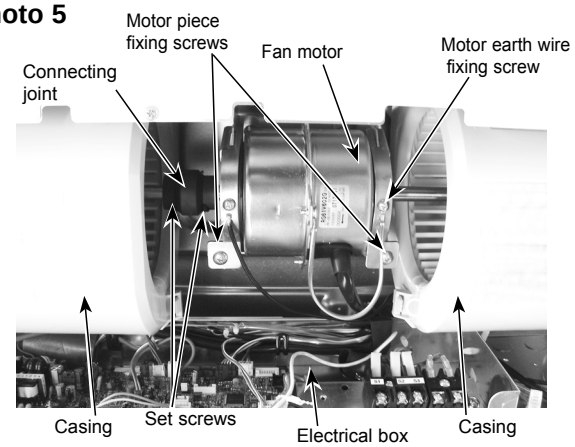
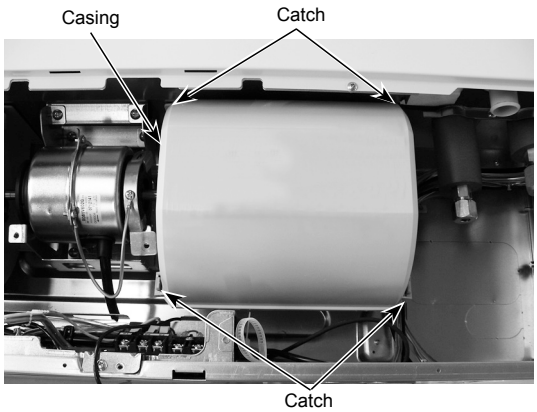
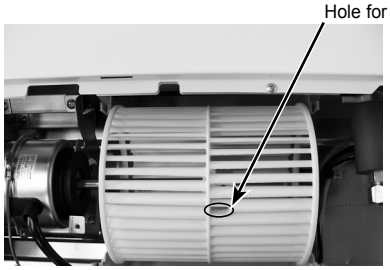
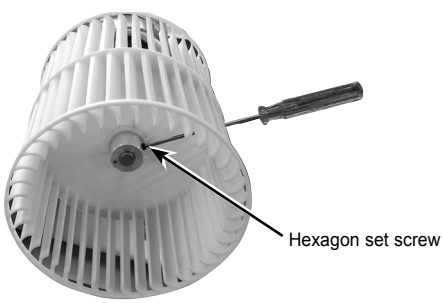
8 DISASSEMBLY PROCEDURE

PCFY-P15NKMU-E PCFY-P24NKUM-E
PCFY-P30NKMU-E PCFY-P36NKMU-E

Be careful when removing heavy parts.

(Photo: **PCFY-P36NKMU-E**)

OPERATING PROCEDURE	PHOTOS & ILLUSTRATIONS
1. Removing the air intake grille (1) Slide the air intake grille holding knobs (at 2 or 3 locations) to the rear to open the air intake grille. (See Figure 1) (2) While the air intake grille left open, push the stoppers on the rear hinges (at 2 or 3 locations) to pull out the air intake grille. (See Figure 2) **Figure 2**  Pull out the air intake grille	**Figure 1** 
2. Removing the indoor controller board and the electrical box (1) Remove the air intake grille. (See Figure 1,2) (2) Remove the screw from the beam and remove the beam. (See Photo 1) (3) Remove 2 screws from the electrical cover, and remove the electrical cover. (4) Remove 2 screws from the electrical box and pull the electrical box downward. Temporarily secure the electrical box using 2 hooks in the back of electrical box. (5) Disconnect the connectors on the indoor controller board. [Removing the electrical box] (6) Disconnect the wires from the terminal blocks and pull out the electrical box. (See Photo 2) [Removing the indoor controller board] (6) Remove the 6 supports from the indoor controller board and remove the indoor controller board. (See Photo 3)	**Photo 1**  **Photo 2**  **Photo 3** 

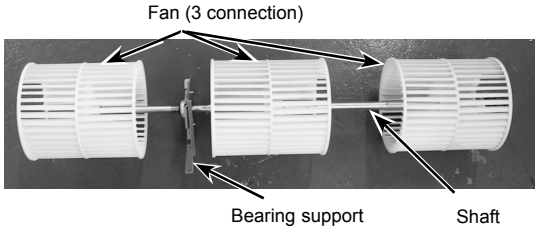
OPERATING PROCEDURE	PHOTOS & ILLUSTRATIONS
3. Removing the room temperature thermistor (TH21) (1) Remove the air intake grille. (See Figure 1,2) (2) Remove the screw from the beam and remove the beam. (See Photo 1) (3) Remove 2 screws from the electrical cover, and remove the electrical cover. (4) Remove 2 screws from the electrical box and pull the electrical box downward. Temporarily secure the electrical box using 2 hooks in the back of electrical box. (5) Disconnect the connector CN20 (red) from the indoor controller board. (6) Remove the sensor holder from the electrical box and remove the thermistor form the holder.	**Photo 4** 
4. Removing the fan motor and right side fan (1) Remove the air intake grille. (See Figure 1,2) (2) Remove the screw from the beam and remove the beam. (See Photo 1) (3) Remove 2 screws from the electrical cover, and remove the electrical cover. (4) Remove 2 screws from the electrical box and pull the electrical box downward. (5) Temporarily secure the electrical box using 2 hooks in the back of electrical box. (6) Remove the lower casing while pressing the 4 catches of the casing (right side of the fan motor). (See Photo 6) (7) Loosen the 2 set screws (2 hexagon set screws) of connecting joint and slide the fan motor to the left. (See Photo 5) (8) Remove the screw for motor earth wire. (See Photo 5) (9) Remove the motor piece (left and right, each 1 screw). (See Photo 5) (10) Remove the fan motor and right side fan together. (11) Loosen the set screw (hexagon set screw) of fan and remove the fan from the shaft. (See Photo 7,8)	**Photo 5**  **Photo 6**  **Photo 7** 
Photo 8  	

OPERATING PROCEDURE

5. Removing the fan (3 connection)

(1) Remove the air intake grille. (See Figure 1,2)
(2) Remove the screw from the beam and remove the beam. (See Photo 1)
(3) Remove 2 screws from the electrical cover, and remove the electrical cover.
(4) Remove 2 screws from the electrical box and pull the electrical box downward.
Temporarily secure the electrical box using 2 hooks in the back of electrical box.
(5) Remove 2 screws from the left side beam and remove the beam. (See Photo 9)
(6) Loosen 2 set screws (2 hexagon set screws) of connecting joint. (See Photo 5)
(7) Remove 3 lower casings while pressing each 4 catches of the casing. (See Photo 6)
(8) Remove the 4 screws from the bearing support. (See Photo 10)
(9) Slide the connecting joint to the left and remove the fans and shaft together. (See Photo 11)
(10) Remove the fan from the shaft. (See Photo 7,8)

Photo 11



PHOTOS & ILLUSTRATIONS

Photo 9

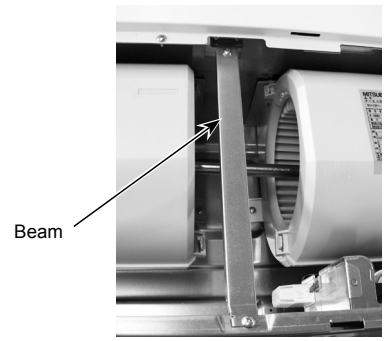
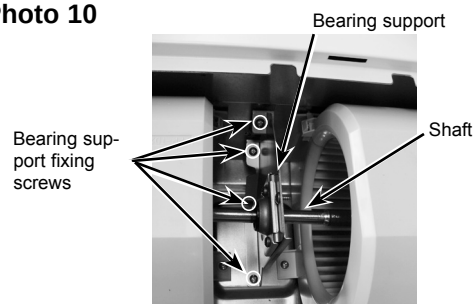


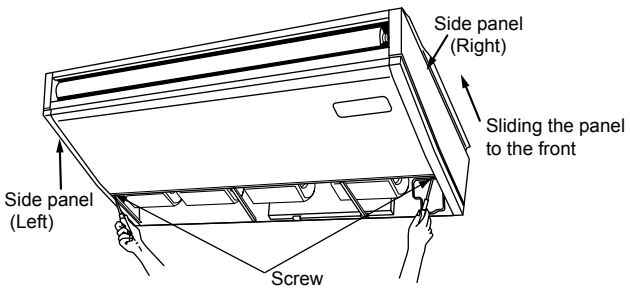
Photo 10

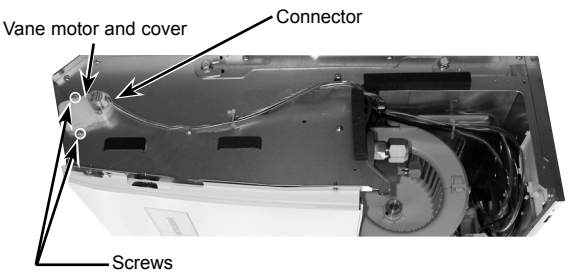
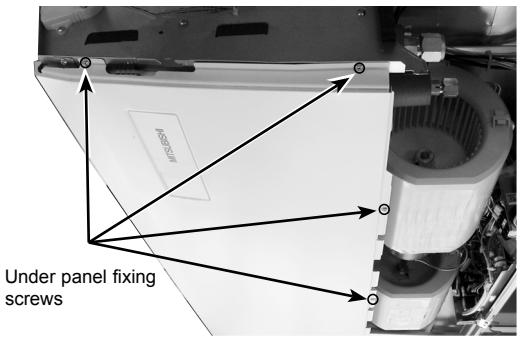
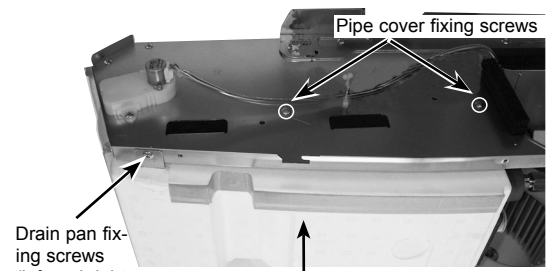
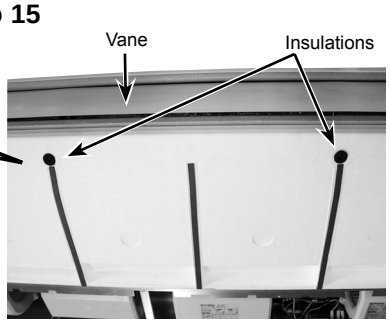
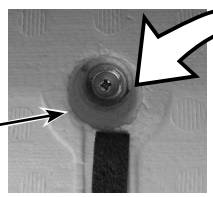


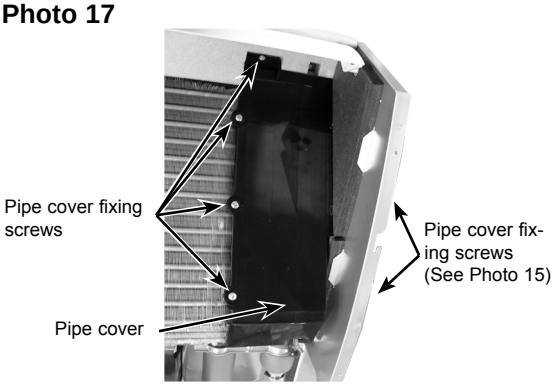
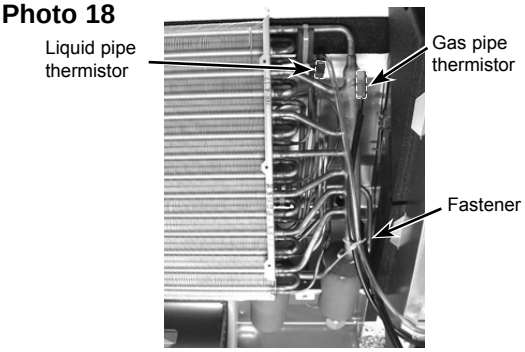
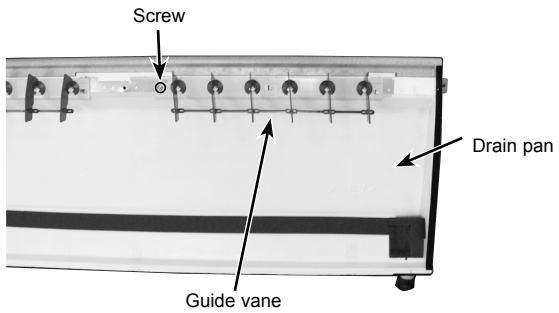
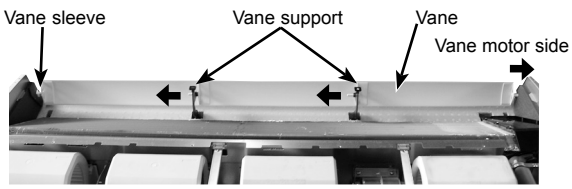
6. Removing the side panel

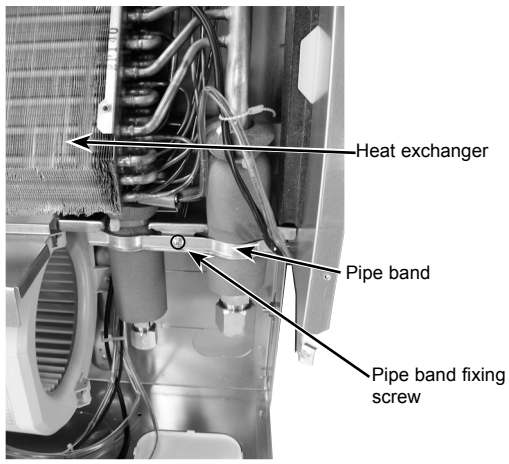
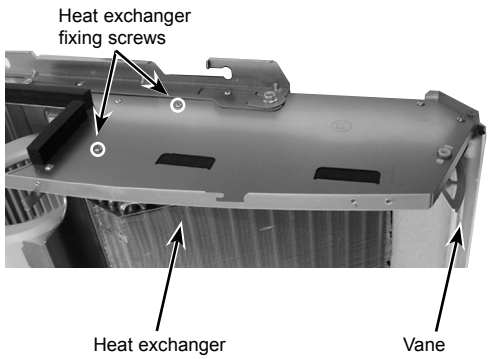
(1) Remove the air intake grille. (See Figure 1,2)
(2) Remove the screw from the side panel, and remove the side panel by sliding the panel to the front.

Figure 3



OPERATING PROCEDURE	PHOTOS & ILLUSTRATIONS
7. Removing the vane motor (1) Remove the air intake. (See Figure 1,2) (2) Remove the right side panel. (See Figure 3) (3) Remove the connector of vane motor. (4) Remove 2 screws of vane motor cover , then remove vane motor.	**Photo 12** 
8. Removing the under panel (1) Remove the air intake grille. (See Figure 1,2) (2) Remove the left and right side panels. (See Figure 3) (3) Remove the beam. (See Photo 1) (4) Remove the electrical cover. (See Photo 1) (5) Pull the electrical box downward. (See Photo 2) (6) (Wireless remote controller receiver type only) Disconnect the connector CNB from the PCB for wireless remote controller and remove the clamp and strap for wires. (7) Remove 8 screws from the under panel. (8) Move the under panel forward by about 7/16in. (10mm) and remove the under panel.	**Photo 13** 
9. Removing the drain pan (1) Remove the air intake grille. (See Figure 1,2) (2) Remove the side panel (right and left). (See Figure 3) (3) Remove the under panel. (See Photo 13) Remove the screws of the right and left side drain pan. (See Photo 14) (4) Remove 2 insulation in centre of the drain pan, and after removing 2 screws with washer, remove the drain pan. (See Photo 15,16) (Note) Please be aware that there might be some drainage left in the drain pan when you remove the drain pan.	**Photo 14**  **Photo 15** 
Photo 16  	

OPERATING PROCEDURE	PHOTOS & ILLUSTRATIONS
10. Removing the pipe thermistors/Liquid (TH22) and Gas (TH23) (1) Remove the air intake grille. (See Figure 1,2) (2) Remove the left and right side panels. (See Figure 3) (3) Remove the under panel. (See Photo 13) (4) Remove the drain pan. (See Photo 14, 15, 16) (5) Disconnect the connector CN44 (white) from the indoor controller board. (6) Remove 6 screws from the pipe cover and remove the pipe cover. (See Photo 14, 17) (7) Remove the fastener for wires and remove the thermistors (liquid and gas) from each holder. (See Photo 18)	**Photo 17**  **Photo 18** 
11. Removing the guide vane (1) Remove the intake grille. (See Figure 1,2) (2) Remove the side panel (right and left). (See Figure 3) (3) Remove the under panel. (See Photo 13) (4) Remove the drain pan. (See Photo 14, 15,16) (5) Remove the screw from the guide vane, then remove the guide vane.	**Photo 19** 
12. Removing the Auto vane (1) Remove the intake grille. (See Figure 1,2) (2) Remove the right side panel. (See Figure 3) (3) Remove the vane motor and cover. (See Photo 12) (4) Slide the auto vane to the vane motor side. (5) Remove 2 axes from each vane support pushing the vane support to the vane sleeve side.	**Photo 20** 

OPERATING PROCEDURE	PHOTOS & ILLUSTRATIONS
13. Removing the heat exchanger and LEV (1) Remove the air intake grille. (See Figure 1,2) (2) Remove the beam. (See Photo 1) (3) Remove the electrical cover. (See Photo 1) (4) Pull the electrical box downward. (See Photo 2) (5) Disconnect the connector CN60 (white) from the indoor controller board. (6) Remove the left and right side panels. (See Figure 3) (7) Remove the under panel. (See Photo 13) (8) Remove the drain pan. (See Photo 14,15,16) (9) Remove the pipe cover. (See Photo 17) (10) Remove the pipe thermistors (TH22 and TH23) from each holder. (See Photo 18) (11) Remove the pipe band fixing screw and remove the pipe band. (See Photo 21) (12) Remove 2 screws from the heat exchanger and remove the heat exchanger with LEV.	**Photo 21**  **Photo 22** 

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